SPACE FOR ALL

OPTIONS FOR A GREATER TORONTO AREA GREENLANDS STRATEGY

Ron Kanter, M.P.P.
St. Andrew-St. Patrick

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for
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GREENLANDS STRATEGY

1990

RECYCLED PAPER

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ST. ANDREW - ST. PATRICK

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Greater Toronto
Area Greenlands
Strategy

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The Honourable David Peterson
Premier
Legislative Building
Queen's Park
Toronto, Ontario

Dear Premier:

As per your request of October 17, 1989, I am pleased to present options for a Greater Toronto Area Greenlands Strategy.

In accordance with my terms of reference, the report has been provided to the Cabinet Committee on Housing and Community Development.

I have thoroughly enjoyed this challenging project.

Sincerely yours,

Ron Kanter

Ron Kanter, M.P.P.
St. Andrew - St. Patrick

ACKNOWLEDGEMENTS

Throughout the course of my work, many individuals, interest groups and public bodies generously took the time to talk to me and provide me with an array of useful facts and information.

Specifically, I would like to thank the regional municipalities and conservation authorities who helped orient me to the Greater Toronto Area in general, and in particular, to some of the development patterns and pressures and open space and natural areas of the GTA.

I would like to thank the various provincial ministries who arranged to meet with me, often on short notice, and who explained the workings of different legislation and provincial policies and programs.

Further, I would like to thank the many interested groups and individuals who, often on their own time, met with me, provided information and data, and who so clearly and succinctly provided me with their respective thoughts and perspectives.

Lastly, I would like to thank all those who took the time to respond to my request for comments, particularly in the short time frame provided.

Ron Kanter

TABLE OF CONTENTS

1. **INTRODUCTION** 1

1.1 Need for Action 2
1.2 Study Overview 7
  1.2.1 Main Tasks 7
  1.2.2 Process 8
  1.2.3 Perspective 9
  1.2.4 Approach 9
  1.2.5 Greenlands and Planning for the GTA . . 10

2. **SCOPE** 11

2.1 Significance of Greenlands 11
  2.1.1 Physical and Mental Health 11
  2.1.2 Quality of Life 13
  2.1.3 Demographic Change 14
2.2 Challenges of the GTA 15
2.3 Defining Greenlands 23
2.4 Areas of Concentration 23

3. **GTA REGIONAL GREENLANDS SYSTEM** 27

3.1 Overview 27
3.2 Significant Natural Areas 28
  3.2.1 Areas of Natural and Scientific Interest 29
  3.2.2 Wetlands 29
  3.2.3 Environmentally Significant/Sensitive Areas 30
  3.2.4 Significant Fishery Streams 31
  3.2.5 Summary -- Natural Areas in the GTA . 32
3.3 Significant Cultural and Archaeological Areas . . 38
3.4 Valley Systems 39
3.5 Niagara Escarpment 40
3.6 Oak Ridges Moraine Area 41
  3.6.1 Topography 42
  3.6.2 Soils 45
  3.6.3 Surface Water 46
  3.6.4 Baseflow 49
  3.6.5 Aquifer Systems 50
  3.6.6 Land-Use Planning 54
3.7 Open Space/Trail Systems 56
3.8 Connecting Links 58
3.9 Classifying Greenlands 59
3.10 Other Land Uses 65
  3.10.1 Agriculture 66
  3.10.2 Urban Development 67
  3.10.3 Rural Estate Development 68
  3.10.4 Aggregate Extraction 70
  3.10.5 Golf Courses 73
  3.10.6 Waste Disposal Sites 74
3.11 Summary -- A GTA Greenlands System 75

4. MANAGING GREENLANDS 81

5. OPTIONS FOR SECURING GREENLANDS 85

5.1 Land-Use Planning 85
  5.1.1 Local Municipal 85
  5.1.2 Regional Municipal 90
  5.1.3 Provincial 94
5.2 Development Permit System 106
  5.2.1 Valleys/Watercourses 107
  5.2.2 Water Taking/Water Quality 111
5.3 Acquisition 113
5.4 Land Stewardship 116
  5.4.1 Option One: Stewardship Techniques . . 117
  5.4.2 Option Two: Foundations/Land Trusts . 127
  5.4.3 Incentives for Land Stewardship 131
5.5 Other Mechanisms 136
  5.5.1 Tree-Cutting 136
  5.5.2 Compact Urban Form/Cluster Development 138
  5.5.3 Buffer Zones 140
  5.5.4 Tax 141

6. INSTITUTIONAL ARRANGEMENTS 143

6.1 Existing Organizations 143
6.2 New Agency 144
6.3 Co-ordinating Body 144

7. PUBLIC ROLE 147

7.1 Public Education 148
7.2 Research/Advisory 148
7.3 Rehabilitation/Enhancement 149
7.4 Private Landowner Initiatives 150

CONCLUSIONS 153

RECOMMENDATIONS 157

APPENDICES

Appendix I. Terms of Reference i
Appendix II. Contacts Made Throughout Study iii
Appendix III. Public Input v

SELECTED BIBLIOGRAPHY xiii

MAPS

Map 1. Greater Toronto Area 3
Map 2. Urbanization 17
Map 3. Oak Ridges Moraine Area 43
Map 4. Trail Systems 77
Map 5. Greenlands 79

FIGURES

Figure 1. Number of Greenland Features/Areas in GTA by Municipality 33
Figure 2. Headwater Streams in Oak Ridges Moraine Area 47
Figure 3. Classification of Greenland Elements on the Basis of Status 63
Figure 4. Classification of Greenland Elements on the Basis of Attributes 64

1. INTRODUCTION

The Greater Toronto Area (GTA), consisting of the Regional Municipalities of Halton, Peel, York, Durham, and Metropolitan Toronto, occupies less than 1 per cent of Ontario's land base, and yet it houses more than 40 per cent of the province's people (See Map 1).

The number of people living in the GTA has been increasing at a fast rate and is expected to increase substantially in the near future. The forecast is that it will reach 5.4 million by 2011, an increase of almost 50 per cent over the 1986 population base (Clayton Research Associates Limited, 1989).

The number of households in the GTA has also increased dramatically. In the 1986-1991 period, household growth is expected to average 39,200 annually -- more than 50 per cent higher than in 1981-1986. After 1991, household increases, while still high, will level off to approximately 30,000 per year (Clayton Research Associates Limited, 1989).

This unprecedented growth is creating tremendous strain on the GTA's infrastructure: solid waste management, transportation, sewers, and water supply. It is also placing pressure on the resource base of the area -- threatening the wetlands, forested areas, agricultural land, etc.

While it is a major focal point of the province, the GTA is also significant for its environmental diversity. It contains two major physiographic features: the Niagara Escarpment and the Oak Ridges Moraine. More than 21 per cent of the land base is forest-covered. It also houses a host of provincially rare plant and animal species and contains a number of provincially significant wetlands and natural areas (Ontario Ministry of Natural Resources, 1989).

Therefore, to properly plan for the future of the GTA, a comprehensive look at the natural resources and attributes of the area, in light of the area's potential growth is required.

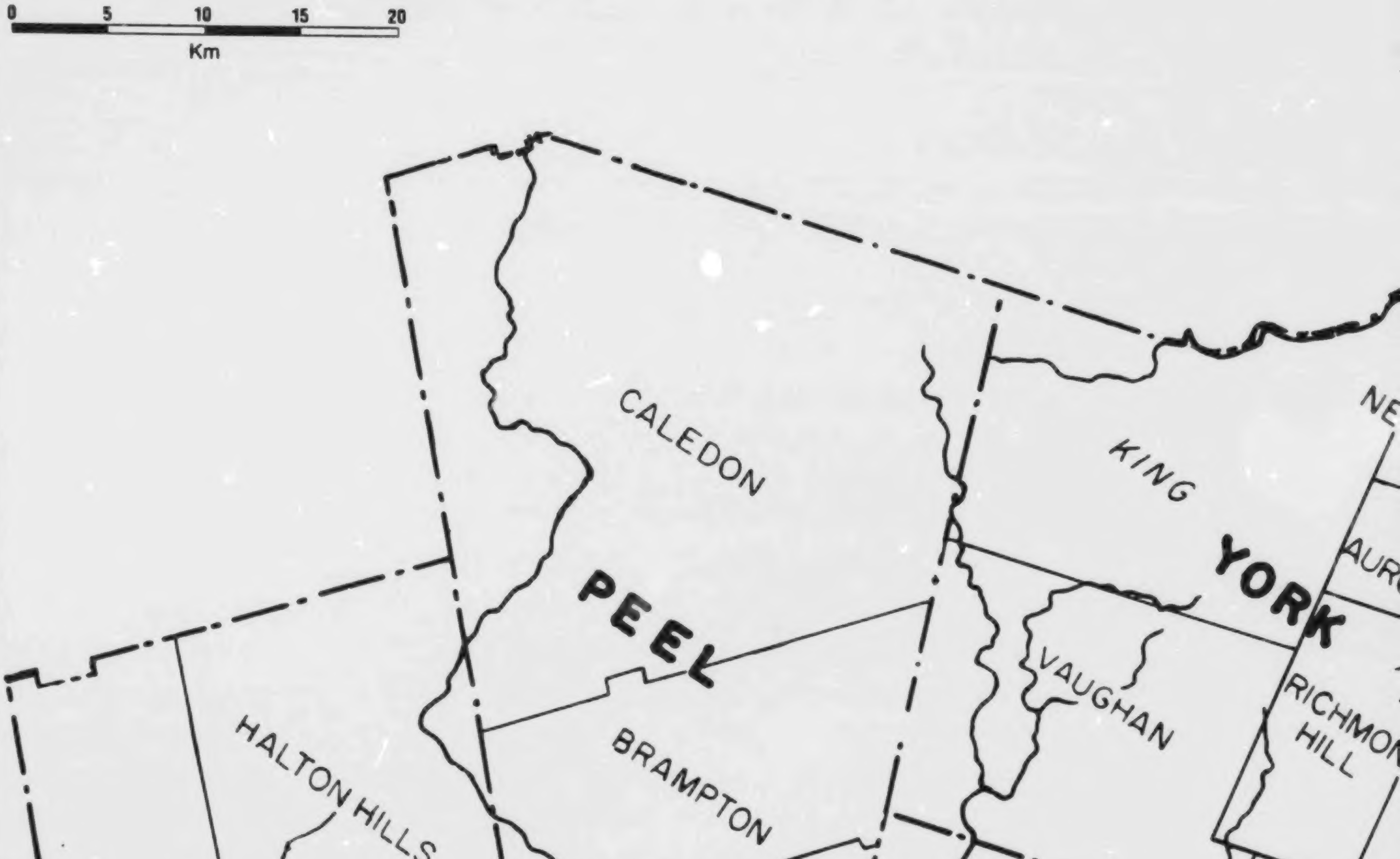
1.1 Need for Action

Growth in the GTA will continue. Attempts to prevent or to slow down growth have been tried in other jurisdictions and they have not proved successful. But the unprecedented nature and pattern of growth in the GTA is such that the use of land is often based on small-scale, short-term planning decisions. This has resulted in tremendous pressure from development on open space and natural areas.

There is only one land base to serve a variety of uses or perform certain functions. It must always be remembered that this land base exists in an undeveloped, natural state only once. Once developed it is only redeveloped in the future and seldom returned to a natural state. The conversion of land, based primarily on economic considerations, appears to be a significant concern of the public. In a 1989 Environics poll, more than six in ten Canadians said that conservation priorities should be more important than economic ones in influencing land-use decisions (Environics Research Group Limited, 1989).

"Greenlands" have traditionally been viewed primarily as public recreation parks. In recent years, however, a fundamental shift in thinking has been occurring. People are starting to consider greenlands as significant to their own personal health and enjoyment as well as to the overall health of the environment. The importance of natural ecosystems, significant wildlife habitats, forested areas and major physiographic features is an emerging public value.

Greater Toronto Area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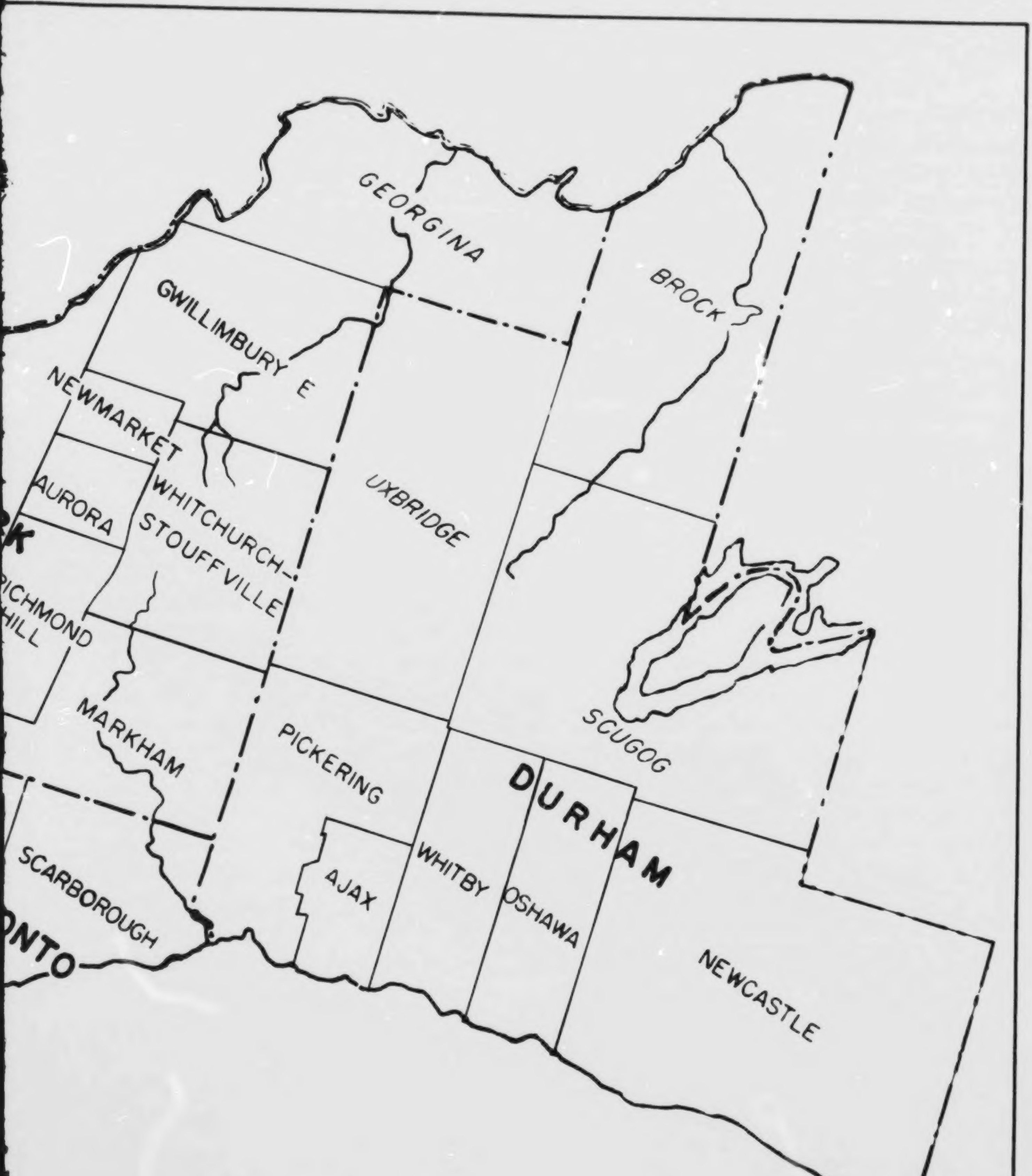
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WHITBY
AJAX
OSHAWA
SCARBOROUGH
ONTO
NEWCASTLE

MAP 1

Requiring that all land in the GTA be left in an undeveloped state is unrealistic; however, making a concerted effort to retain key, significant areas is not only realistic, it is desirable. Attempting to achieve this goal without one overall approach would be extremely difficult.

It was in this light that on October 17, 1989 Premier David Peterson asked Ron Kanter, M.P.P., St. Andrew - St. Patrick, to conduct a study and to recommend options for a Greenlands Strategy for the Greater Toronto Area.

Developing a green strategy for the Greater Toronto Area offers several important benefits, including:

- providing clear direction and one central focus. While it would be implemented by one or several different agencies, the single objective of achieving the strategy would remain the same;
- addressing the pressures on open space and natural areas associated with rapid urbanization which is occurring across all Regions and thus taking a broader perspective than individual efforts of the past;
- helping to guide decisions regarding the allocation of efforts and resources by identifying significant areas across the entire area and how individual sites relate to the overall strategy;
- providing the information required so that significant open space and natural areas can be incorporated early in the planning and development process; and
- providing a common, consistent starting point for everyone - governments, developers, interest groups and

residents - and indicating the areas of priority and where proposals for development would be subject to the greatest scrutiny.

The difficulties associated with tremendous growth are being experienced collectively by all five Regions in the GTA. Therefore, it would seem most appropriate to consider strategies and solutions on the same GTA-wide scale.

The question is: Is there space enough for all? The answer is: Yes! But, if the answer is truly to be yes, changes must occur to the ways that planning and development occur in the GTA, and new and innovative ways will have to be found to help retain open space and natural areas.

While the vitality of the GTA is linked to its economic prosperity through growth, it is also linked to the types of natural and built environments that are provided for its people. A balance must be struck.

1.2 Study Overview

1.2.1 Main Tasks

To examine options for developing a Greater Toronto Area Greenlands Strategy, three main tasks were undertaken:

- the identification of areas to be included in a regional greenlands system;
- the examination of various mechanisms to secure and, as appropriate, to rehabilitate or enhance greenlands; and
- the examination of alternative institutional arrangements to assist in implementing a strategy.

In regard to the first task -- the identification of areas to be included in a regional greenlands system -- heavy reliance was placed on existing information such as local environmentally significant areas studies, data on areas of natural and scientific interest, wetlands, parks, and open spaces, as prepared by various provincial ministries, conservation authorities, municipalities, and others.

The challenge here is to take such information from different sources and put it into one comprehensive system.

Specific to the second task -- mechanisms to secure and, as appropriate, to rehabilitate or enhance greenlands -- the various mechanisms explored included: land-use planning; the development control permit system (e.g., Fill, Construction, and Alteration to Waterways Regulations of conservation authorities); acquisition; and land stewardship.

The third task -- institutional arrangements to implement a greenlands strategy -- included an examination of options that, in general, can be grouped into three categories: by existing public bodies; by a new level of government or public body; and through some form of co-ordinating function.

1.2.2 Process

A process was devised to maximize an array of contacts and input within the study's tight timeframe.

Orientation included contact with 13 provincial ministries involved in greenlands and with representatives of the five regional municipalities and six conservation authorities in the GTA. Discussions were also held with a number of umbrella interest groups, such as the Conservation Council of Ontario, the Federation of Ontario Naturalists, and the Urban Development Institute.

On December 13, 1989, an initial workshop was held to help orient thinking on greenlands. It was attended by representatives from various government bodies, umbrella interest groups, academics, and professionals.

Starting in mid-January 1990, letters requesting written comments on a GTA greenlands strategy were sent out to a wide range of groups and individuals. Groups contacted included community associations, special interest groups, individuals, and public bodies -- including all regional and local municipalities and conservation authorities in the GTA.

In addition, every attempt was made to accept invitations to address regional municipalities, local municipalities, and conservation authorities. Contacts were also made with other jurisdictions in Canada, the United States, and Great Britain for information on how they approach protection of open space and natural areas.

1.2.3 Perspective

The study perspective was regional, not local, in focus.

Areas were examined with a view to inclusion in a major greenlands system for the GTA. As a result, local municipal parks and open spaces were not specifically included. Such lands, however, do have a definite role to play by feeding into a larger regional greenlands system.

1.2.4 Approach

In dealing with an area such as the GTA, it quickly became apparent that there are many organizations and bodies involved, to varying degrees, in greenlands. At least 13 provincial ministries, five regional governments, 30 local municipalities, six conservation authorities, several boards and commissions, and a variety of interest groups, all have an interest in greenlands. In fact, some have already initiated open space and natural area plans for their jurisdictions. It was often asked how this particular study related to other initiatives.

In response, it was indicated that the study was intended to develop options for a greenlands strategy. This strategy would provide an overview or overall framework for greenlands in the GTA.

As with any strategy, it would have to be refined and subsequent actions taken in moving towards implementation. A strategy should be considered both as a starting point and the goal against which progress is measured over time.

1.2.5 Greenlands and Planning for the GTA

The GTA Urban Structure Concepts Study, undertaken for the regional municipalities and the Province, examined the implications of various future development scenarios for the GTA. It looked at such factors as population and employment projections and what they mean to sewer and water infrastructure, solid waste management, transportation, etc. Consideration of green spaces was also a component of the Urban Structure Concepts Study.

To this end, there has been ongoing co-operation between this Greenlands Study and the GTA Urban Structure Concepts exercise, as well as with the Honourable David Crombie's Royal Commission on the Future of the Toronto Waterfront.

2. SCOPE

There are many factors to consider when developing a greenlands strategy. The significance of open spaces and natural areas should be examined, as well as potential challenges to the retention of these green areas. It is also important to understand clearly what is included in the term "greenlands".

2.1 Significance of Greenlands

Many greenlands serve as vital natural agents, ensuring the integrity and continuing existence of a balanced ecosystem. These areas provide us with clean air and water and preserve the diversity of plant and wildlife habitat.

This natural function that greenlands perform is paramount in importance, although it is also imperative to examine the other benefits associated with the presence of green areas.

2.1.1 Physical and Mental Health

The quality and quantity of greenlands have an impact on the physical and mental well-being of those who live in the GTA. In fact, the important relationship between the environment and personal health is recognized by a majority of people. An Environics poll conducted in 1989 found that, for the first time, the environment emerged as the number one "top-of-mind" concern for Ontarians and that this trend was even more pronounced amongst those who live in the GTA. The survey concluded that the primary reason for this concern was the perception that human health is affected by changes in the environment (Environics Research Group Limited, 1989).

In addition to the beneficial effect greenlands can have on entire geographic areas, they also present the opportunity to improve the physical health of individuals. While some natural areas performing important ecological functions should not be accessible to the public, the range of activities that can take place in many open spaces suit the needs of most people -- from the more active recreation areas that provide real opportunities for physical conditioning, to the areas where people may rest and simply enjoy the natural environment. Many natural areas are suitable for walking, jogging, fishing, horseback riding, bird-watching, and other nature-appreciation activities, as well as picnicking.

Experiencing a natural setting can also contribute to one's mental well-being. An increasingly urban environment, such as that of the GTA, can produce personal stress due to time pressures, crowding, lack of privacy, and demanding jobs. Natural areas, and the contrast they provide to an urban built environment, can have a therapeutic role and may help relieve everyday tension. Studies conducted in the United States indicate that urban forests and open space areas have helped residents apply and develop creative skills and have served to replenish people's adaptive energies by allowing them to escape temporarily from the sometimes stressful social and physical conditions often experienced in home, neighbourhood, and work environments. The desire to "get away from it all" is not limited to adults: research in the United States also indicates that among children "the hunger for trees is outspoken and seemingly universal" and that, even at a young age, there is an expressed need for the silence and solitude nature can provide (Driver and Rosenthal, 1978).

As long ago as 1953, sociologists were reporting that a well-guided introduction to nature itself is the best possible start for a child's happy adjustment to the rest of the world (Burch, 1977). Greenspaces in urban settings allow children and adults to learn more about nature, especially natural processes and human dependence on them, and how to live in greater harmony with the environment.

2.1.2 Quality of Life

In addition to the positive influence greenlands can have on the physical and mental health of individuals in the GTA, such resources can, in a broader sense, also affect the "quality of life" in an area. U.S. studies have begun to document the physical and social factors that add to urban dwellers' satisfaction with their lives. One important factor that has been identified is the quality of one's neighbourhood, a large part of which is the accessibility (by transit rather than by automobile), quality, and quantity of recreation areas, including forested and other green areas (Burch, 1977).

Strong family ties are often quoted as an important component of a high quality of life. Easily accessible open space and natural areas, and the opportunity for a "back to the basics" approach to recreation, allow for more family interactions and can enhance feelings of kinship and solidarity. If the open spaces are within relatively short distances of the built-up urban environment, people of all income levels are provided with the opportunity to escape the busy city life for a time.

Greenlands in close proximity can also assist in the education process. Many school systems today are placing more emphasis on "life skills" and the relationship between humans and the environment. These experiences are not easily conveyed in urban schools, and should be experienced first-hand. To protect the environment for future generations, one should have the opportunity to appreciate natural areas first-hand. However, children should experience and come to understand nature in their own area, rather than concentrating solely on more distant natural settings. To appreciate nature in the GTA, children and adults alike should get to know the Rouge River, for example, rather than always looking for experiences with nature beyond the urban boundaries, in places such as Algonquin Park.

2.1.3 Demographic Change

The protection and enhancement of greenlands has always been important. However, in recent years, the presence of greenlands has become increasingly more significant to those in the GTA, as well as in the rest of the province.

In the first place, Canadian society has seen an increase in the amount of leisure time enjoyed by individuals. The work week has decreased to a general standard of 40 hours or less per week. The distribution of time spent working has also changed: for example, some employers are adopting a flex-hour system or a compressed (e.g. four day) work week. Similarly, paid vacation time has greatly increased over the past 50 years. Part-time employment has also increased, representing the fastest-growing segment of the labour force.

With the greater amount of leisure time comes the desire to find quality ways to enjoy leisure and to unwind, and this includes the enjoyment of open space and natural areas. However, in large metropolitan areas such as the GTA, the increase in leisure time through shorter work weeks is to some degree offset by increased time spent commuting. For this reason, ready access to greenlands both within and in immediate proximity to urban areas is the key.

Another interesting demographic shift that may affect the demand for greenlands protection is the aging population. In Metropolitan Toronto, for example, the median age in 1981 was 32 years. Thirty years later it is projected to be 47. In the GTA, the percentage of people aged 55 and older will increase from 19 per cent in 1991 to 32 per cent in 2031. The average length of retirement has also increased dramatically (Metropolitan Toronto Planning Department, Policy Development Division, 1988).

This increase in the number of older residents in the GTA is significant in that older people are frequent users of open space. Given the growing importance that today's society places on physical well-being, one may quite safely hypothesize that the senior of tomorrow will be much more active than the one of today. The length of retirement and increased length of time during which a senior will be mobile will increase the demand on both active and passive recreation facilities.

2.2 Challenges of the GTA

Recognizing the critical ecological function that greenlands perform, as well as the contribution they can make to a healthy lifestyle, it is important to ensure that adequate open space and natural areas are secured. As development pressures increase and land prices escalate, there is mounting pressure to utilize these greenspaces for other purposes. Future growth in population, housing, and other land uses in the GTA will leave little open space except where public and private agencies intervene.

Perhaps the greatest challenge to greenlands in the GTA is the dramatic population increase. Between 1961 and 1986, the GTA grew by approximately two million people. The growth, largely due to migration to this economically prosperous area, has transformed what were primarily small towns into highly populated centres. Much of this increased population has occurred in the Regions surrounding Metropolitan Toronto, with Peel, for example, experiencing a population expansion greater than 500 per cent (Metropolitan Toronto, 1988).

This fast rate of urbanization is expected to continue. The population of the GTA is projected to be 5.4 million by the year 2011, an increase of about 1.5 million people. This growth will not occur primarily in already urbanized Metropolitan Toronto. For the most part, people will migrate to the other four Regions that make up the GTA.

The challenge of such a population increase is not only in the number of people but, also in the development patterns that typify the GTA. Land is a finite resource, and the entire GTA has only 702,500 hectares (1,735,900 acres). Determining what the land in the GTA is being used for, and at what rate greenlands are being developed, is difficult. For the most part, Regions do not keep records on the total amount of land that has been developed or approved for development purposes.

Rough figures indicate that approximately 25 per cent of land in the GTA is urbanized. Agricultural lands account for about 50 per cent of the GTA, while the remaining 25 per cent can be considered to be used for other purposes, including rural hamlets, non-agricultural rural lands, aggregate extraction, etc.

In terms of Official Plan land-use designations for greenlands, the most commonly used is "open space". Much of this, however, is limited to parks in public ownership and other publicly owned lands. Generally, the majority of land in the GTA is privately owned. As such, today, without public ownership or appropriate controls, greenlands that are privately owned are as negotiable for development as any other privately owned lands.

Currently, in Metropolitan Toronto, housing densities average 23 units per hectare (9.3 units per acre), with the Regions approximating 13.9 units per hectare (5.6 units per acre). If the patterns continue, housing the 1.5 million additional residents at the present densities would eat up a

Greater Toronto Area

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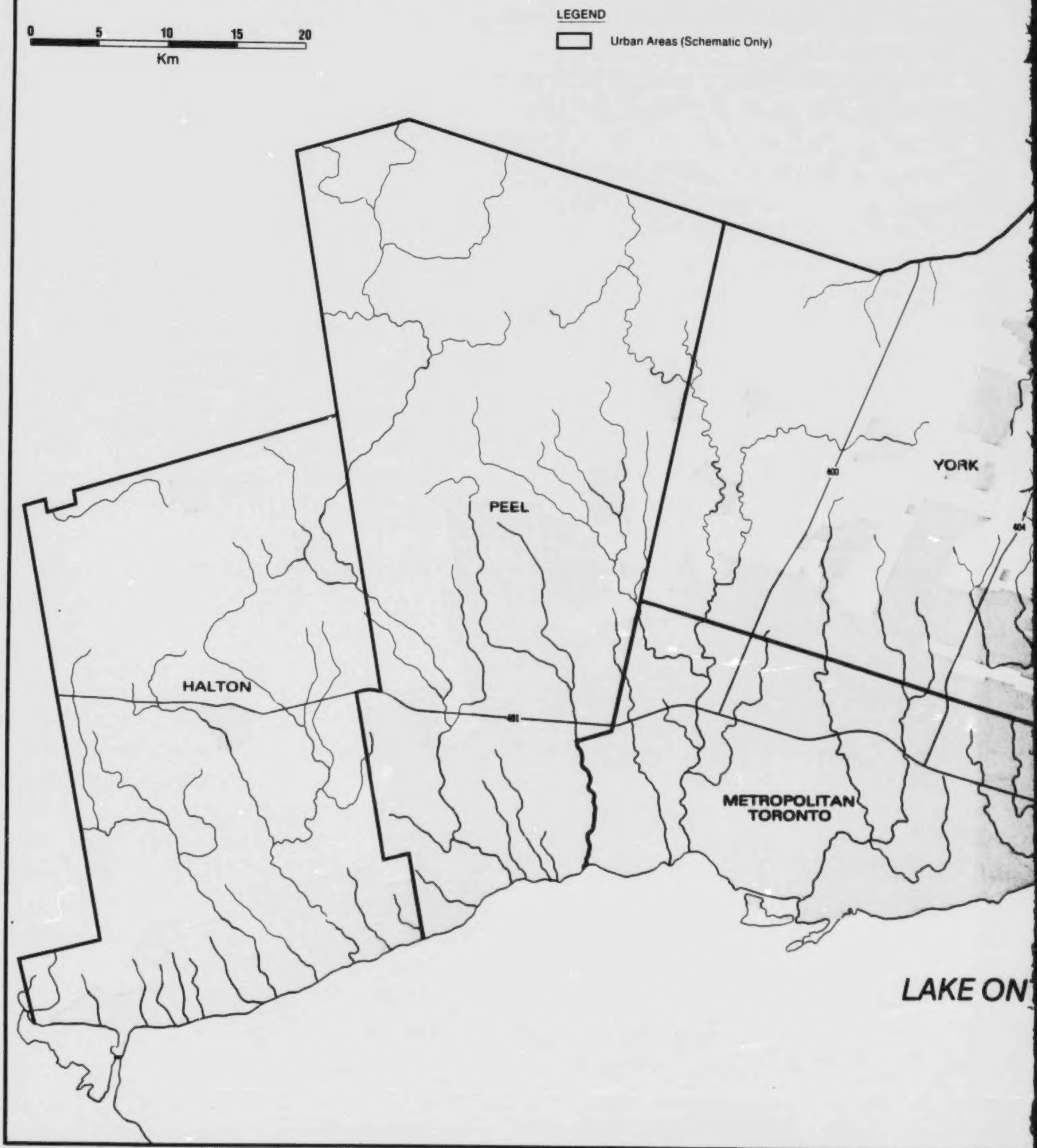
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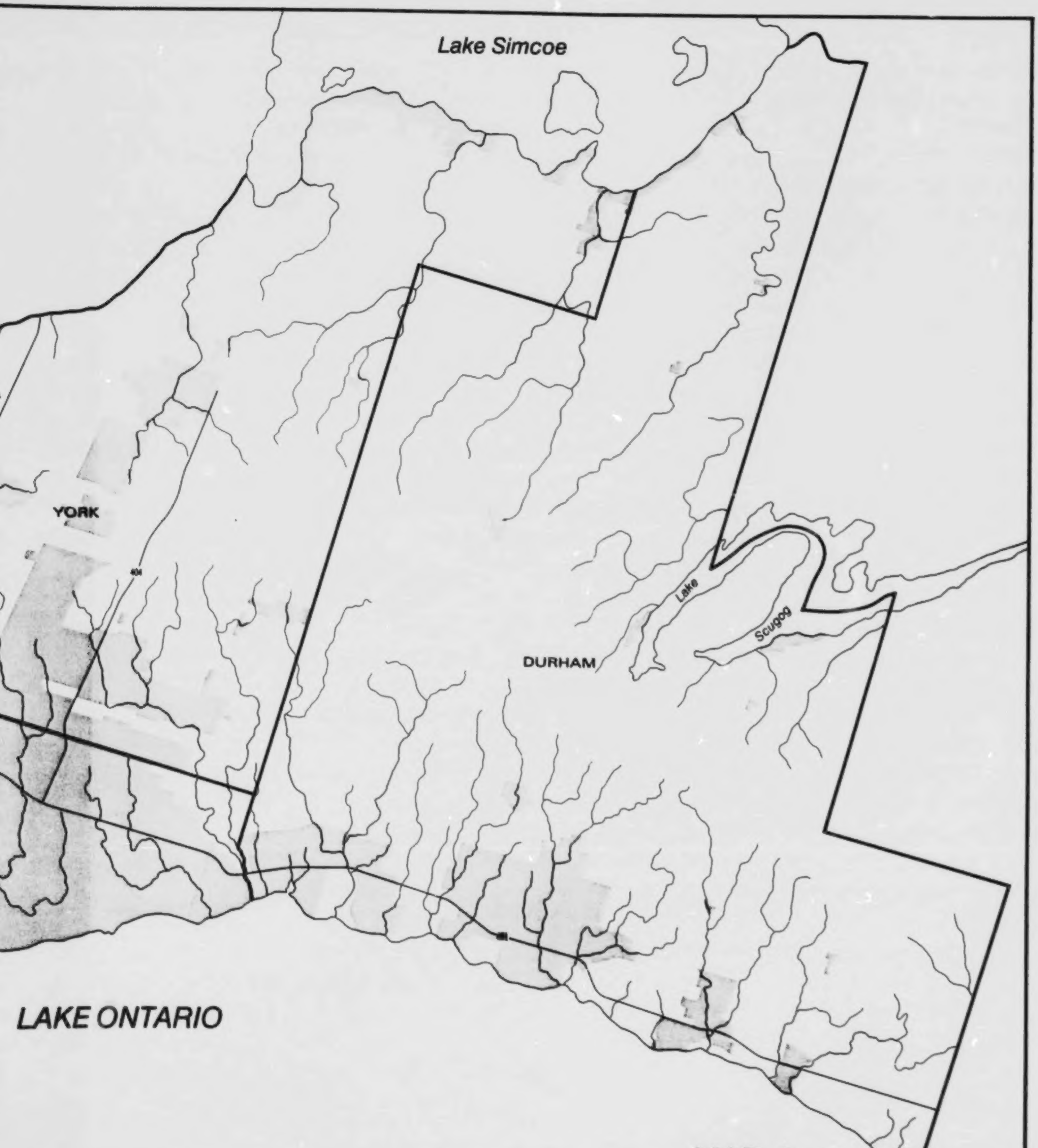
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LAKE ONTARIO

MAP 2

great deal of the undeveloped land. For example, if the population were accommodated at Metropolitan Toronto's average density, roughly calculated, it would require an additional land base almost three-quarters the size of Metropolitan Toronto today. If the settlement patterns more closely resemble those densities currently being experienced in the Regions (5.6 units per acre), a parcel of land larger than the size of Metropolitan Toronto would be required.

In comparison, if future densities approximated those of the inner municipalities of Metropolitan Toronto (i.e., City of Toronto, East York, York), at 34 units per hectare (13.9 units per acre), a land base area slightly greater than one-third the size of Metropolitan Toronto would be required to accommodate 1.5 million people.[1]

Clearly then, how densely we develop in the future will determine how much land remains available for other uses.

Another challenge in the GTA is the cost of land, and consequently, the cost of protecting greenlands. As any person who lives in the GTA knows, it is expensive to buy a parcel of land in this area.

Housing prices are often a good indicator of the cost of land. In Metropolitan Toronto and the four Regions, in the past five years, the average price of a standard detached bungalow has at least doubled. The cost of this land will likely continue to increase, despite occasional variations in this trend.

Recent purchases by area conservation authorities also illustrate the expense of acquiring natural areas. The cost per hectare of land bought by the authorities in the GTA range from a low of $3,700 to more than $741,300 per hectare.

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[1] Densities were calculated by dividing the estimated total residential area by the total number of households. The planning departments of Etobicoke, Peel and Durham provided density estimates for their respective areas.

The skyrocketing value of land increases the pressure to develop all lands, including the filling in of valleys and wetlands and, in most cases, means that measures must be taken to protect significant areas.

Another challenge to the protection of greenlands in the GTA is the number of government bodies and agencies that have an interest in open space and natural areas -- each with different mandates and priorities. In the GTA, there are regional municipalities, area municipalities, and conservation authorities. At the provincial level there are at least 13 ministries with a direct interest in greenlands, as well as several agencies, boards, and commissions (e.g., the Niagara Escarpment Commission). Each of these groups has a different set of rules and objectives to guide it and there is currently little co-ordination or consistency in the approach to greenspace protection over the entire GTA. Natural areas do not respect man-made boundaries and, while conservation authorities are organized on a watershed basis, the primary responsibility for land-use planning decisions rests with municipalities.

There are many challenges to securing adequate greenlands in the GTA, and striking the necessary balance between natural and built-up areas is not easy. Some have suggested that the only solution is to curb growth in the GTA. However, even if curtailing this growth were desirable, history suggests that it is not possible. For example, a number of measures to stop growth were implemented in London, England, but proved ineffective and the population continued to expand.

Perhaps a more graphic illustration of the failure of such policies is seen in Moscow. Included in its no-growth program was the requirement for strict residential permits. The program was not successful and the population of the city actually tripled, yet services were maintained at the same level.

These examples serve to prove that, in fact, growth is inevitable and should be planned for. While there is no simple formula for the protection of important greenlands in rapidly urbanizing areas, other jurisdictions facing similar pressures have struggled to find a successful balance and many have implemented a range of protection measures:

- the States of New Jersey, New York, and Connecticut, also referred to as the Tri-State Region, have been experiencing a shift of population away from the core of the urban areas to the outer ring of suburban counties. The growth of population on the periphery has been tremendous. If current trends continue, it is projected that nearly half the region's lands will be developed by the year 2005. The region has developed a plan to address the problems associated with rapid urban growth and has proposed an implementation strategy that includes an open-space plan, guidelines, incentives, and legislation;

- in the San Francisco Bay area, if the current city and county land-use policies continue over the next two decades, approximately 91,000 hectares (225,000 acres) of the natural greenbelt will be consumed by urban development. This is based on average densities of 10 to 15 units per hectare (four to six per acre). Higher densities are being considered to preserve the remaining greenlands;

- Montgomery County, Maryland, in response to an increase in urban development, adopted a multi-faceted approach to the preservation of farmland that has preserved more rural lands than in any other U.S. county. A structured program for easements and the purchase and transfer of development rights has proved very successful in the county;

- the Open Lands Project in Illinois was formed 25 years ago to protect and improve open space in the populous Chicago area. This highly urbanized region has an extreme shortage of public greenlands and it has worked at developing linear links for a recreation open-space network, using waterways and abandoned railroad rights-of-way as its primary routes. Ultimately, the project plans to implement a comprehensive open-space plan for the area;

- Oregon has developed a co-ordinated planning system across the state, including the design of urban envelopes that allow for higher densities in urban areas and conservation zoning outside the boundaries; and

- open-space policy initiatives have also been undertaken recently or are proposed in California, Maine, New Jersey, Rhode Island, Florida, Nevada, and New York. Money for acquiring open space has been raised by additional sales taxes, a surcharge on real estate transactions, even a cigarette tax.

In Canada, efforts to preserve rural lands, primarily agricultural areas, have been initiated in several provinces, notably British Columbia, with its Cabinet-appointed Agricultural Land Commission. The Regional Municipality of Niagara in Ontario is currently examining various methods to protect prime farmland in that area. Several urban areas have experimented with greenbelts, Ottawa's perhaps being the most ambitious.

All these efforts have resulted in some measure of success, as well as some failures. Many are just initial efforts and much more work is needed to protect greenlands. While many of their ideas are interesting and may have some applicability to the GTA, there is no one area that has found a solution that could be copied in the GTA and successfully protect greenlands. The GTA may share some similarities with these areas, but it has many differences as well and its strategy for greenlands protection must be uniquely its own.

2.3 Defining Greenlands

Past tendency has been to equate greenlands with public recreation parks. However, in recent years a shift in public perception has occurred as open spaces are recognized as significant to a high quality environment.

Therefore, for the purposes of this exercise, greenlands were defined to include:

- significant areas, whether natural, cultural or archaeological;
- areas that have important natural functions, such as water recharge and discharge, habitat links, etc.; and
- areas that serve as green corridors or open-space areas for walking, jogging, hiking, cycling, cross-country skiing, etc.

2.4 Areas of Concentration

While the general study area is the Greater Toronto Area, the specific areas of concentrated interest are:

- the Oak Ridges Moraine Area;

- the river valleys and watercourses flowing into Lake Ontario and Lake Simcoe;

- the tablelands between the valley systems; and

- connecting corridors to serve as links between the valley systems and the Oak Ridges Moraine.

The study did not look specifically at the Lake Ontario waterfront because this is the responsibility of the Royal Commission on the Future of the Toronto Waterfront. While the Commission is operating in a longer timeframe and is looking at a variety of matters, those involved in the two studies have shared information and conducted ongoing liaison, with a view to making greenland proposals as compatible as possible.

While cognizant of the significance of the Niagara Escarpment, the study did not concentrate on it. With the establishment of the Niagara Escarpment Commission and the existence of the Niagara Escarpment Plan, greenlands there are already being dealt with in a co-ordinated manner and mechanisms exist to address them.

Only cursory attention was paid to the Lake Simcoe shoreline in the context of this study as only a very small portion of the Lake Simcoe shoreline lies in the GTA.

While the greenlands study was aware of water quality concerns, specific actions have not been proposed to address water-quality *per se*. Emphasis was placed on the identification of the lands themselves and the means to secure them. Initiatives such as the Toronto Area Management Strategy (TAMS) and the Metropolitan Toronto Remedial Action Plan (RAP) have taken place or are now under way dealing primarily with water quality. It is recognized that water-quality issues cannot be divorced from land-use issues and efforts have been made to become cognizant of work being done on water quality and to ensure that initiatives are complementary.

Finally, there are several key and innovative planning exercises and clean-up programs for individual rivers such as the Rouge River, Don River, and Black Creek (Metropolitan Toronto and York Region). These exercises are to be applauded and similar exercises for other major watercourses should be encouraged. These clean-up programs have not been specifically addressed because, as in the case of the Metropolitan Toronto RAP exercise, these are water-based, as opposed to the land-based focus of this study.

3. GTA REGIONAL GREENLANDS SYSTEM

3.1 Overview

The Greater Toronto Area is home to some four million people. It is also home to a wide variety of flora and fauna and contains many examples of the rich archaeological and cultural history of the area.

The GTA includes two of the most significant physiographic features in southern Ontario -- the Niagara Escarpment and the Oak Ridges Moraine.

On March 26, 1990, the Premier announced the provincial intention to preserve 4,250 hectares (10,500 acres) of the Rouge River valley as a park. This will make the Rouge Canada's largest urban park.

The GTA contains five provincial parks totalling 1,500 hectares (3,700 acres) in size.

Approximately 27,000 hectares (67,000 acres) of land are owned by the six conservation authorities. Another 650 hectares (1,600 acres) are publicly accessible crown lands. In addition, more than 2,800 hectares (7,000 acres) are in regional agreement forests.

Western Lake Ontario, on the southern edge of the GTA, is one of Ontario's largest sport fisheries. In 1988, more than one million kilograms (two million pounds) of salmon and trout were caught. Lake Simcoe, on the GTA's northern boundary, supports the province's largest ice fishing area, generating millions of dollars for the local economy.

More than 373,000 hectares (920,000 acres) of the GTA, some

21 per cent of the land surface, is forest-covered. It contains some 267 wetlands, 22 of which are provincially significant, and 154 areas of natural and scientific interest, 65 of which are provincially significant. There are 109 provincially rare plant and animal species and five provincially rare fish species in the GTA (Ontario Ministry of Natural Resources, 1989).

In general, the Greater Toronto Area is one of the more biologically diverse areas in the province, ranging from Carolinian woodlots and relict prairies to remnant boreal bogs.

3.2 Significant Natural Areas

For the purpose of this report, "natural areas" are those that have been identified by provincial ministries, agencies, conservation authorities, and regional municipalities as being of particular biological, geological or hydrological significance or sensitivity.

While some natural areas are significant because they contain rare plants or animals or provide representative examples of different natural communities, it is also important to note that other natural areas are significant because they fill key functions. For example, some wetlands help improve water quality by filtering out impurities, while others aid in reducing downstream flooding by providing flood storage. Large forested areas provide many benefits to urban areas, including cooling in summer and warming in winter (e.g. wind breaks) and helping to improve air quality.

Other greenlands, such as valley systems and vegetated links, are key in providing cover for the movement of wildlife, while still others -- more difficult to see or appreciate -- are important for recharge and discharge purposes in providing continuous base flows for the local watercourses. Most notable in this regard in the GTA is the Oak Ridges Moraine Area.

3.2.1 Areas of Natural and Scientific Interest

Areas of Natural and Scientific Interest (ANSIs) are defined by the Ministry of Natural Resources as "areas of land and water containing natural landscapes or features which have been identified as having values related to protection, natural heritage appreciation, scientific study or education". ANSIs are subdivided into those of earth-science significance and those of life-science significance.

Earth-science ANSIs are selected to illustrate outstanding examples of rock types, fossil localities and landform associations.

For this study, only earth-science ANSIs of provincial significance are included as greenlands. This is because the boundaries of provincially significant earth-science ANSIs are more precisely defined than those of regional or local significance.

Life-science ANSIs are selected to illustrate representative and outstanding landscapes, environments, and biotic communities. For this study, life-science ANSIs of both provincial and regional significance are included as greenlands. Unlike their earth-science counterparts, the boundaries of regionally significant life-science ANSIs have been accurately identified through field surveys.

3.2.2 Wetlands

Wetlands are defined as "lands that are seasonally, or permanently covered by shallow water, as well as lands where the water table is close to or at the surface; in either case, the presence of abundant water has caused the formation of hydric soils and has favoured the dominance of either hydrophytic or water tolerant plants. The four major categories of wetlands are swamps, marshes, bogs, and fens".

Wetlands in southern Ontario are classified according to one standard evaluation system developed jointly by the Ministry of Natural Resources and Environment Canada. The evaluation system ranks wetlands into seven different classes.

In 1989, the Minister of Natural Resources and the Minister of Municipal Affairs jointly released a draft wetlands policy statement pursuant to the Planning Act. The proposed policy statement identifies Classes I and II wetlands as being provincially significant, Class III as regionally significant, and Classes IV to VII as locally significant.

Increasing concern is being expressed regarding the continuous loss of wetlands through land-use conversion. The situation is particularly acute in the GTA, where 51 per cent of the wetland areas have already been lost, while much of the remainder continues to be subject to intense pressure as a result of increased urbanization (Gartner Lee, 1990).

Therefore, all wetlands in the GTA that have been identified, evaluated, and classified by the Ministry of Natural Resources are considered as greenlands for purposes of this report.

3.2.3 Environmentally Significant/Sensitive Areas

Environmentally Significant/Sensitive Areas (ESAs) are generally defined as "natural landscapes, including those lands and waters of inherent biological sensitivity, such as those areas containing aquifer recharges, headwaters, unusual plants, wildlife or landforms, breeding or overwintering habitats, vital ecological functions, rare or endangered species or other combinations of habitat and landform, which could be valuable for scientific research or conservation education".

Within the GTA, ESA studies have been undertaken by the Credit Valley, Metropolitan Toronto and Region, Lake Simcoe Region, Central Lake Ontario, and the Ganaraska Region conservation authorities. One regional municipality, Halton, also has undertaken an ESA study. In this case, the geographic scope encompassed much of the area under the jurisdiction of the Halton Region Conservation Authority.

No two ESA studies are exactly alike, despite their adoption of criteria that are generally similar. Also, their respective foci are on portions (e.g., watershed or a regional municipal basis) of the GTA. In future, efforts should be made to put ESA studies in a greater regional context; despite that, they have been included as greenlands for the purpose of this report.

As well, some ESAs have also been identified as ANSIs or wetlands; this just helps to reinforce the significance of such areas.

3.2.4 Significant Fishery Streams

Watercourses can be categorized as cold water, warm water, and migratory. Cold water streams are those with summer maximum temperatures of less than 21 degrees Celsius and capable of supporting salmonids (e.g., brown and brook trout). Warm water streams are those with summer maximums that exceed 21 degrees Celsius and are therefore too warm to support trout populations. Migratory streams support or have the potential to support, self-sustaining lake runs of salmon and rainbow trout.

Cold and warm water fisheries provide not only angling opportunities, but other recreational enjoyment as well. Fish viewing is a popular recreational pursuit in many areas, particularly during spawning runs when fish can be observed from dams and bridges. The Lake Simcoe spring runs of walleye, northern pike, and white sucker and the spring and fall runs of salmon and trout in Lake Ontario streams attract the most viewers.

Streams in the GTA have been classified by the Ministry of Natural Resources with respect to their fisheries significance. The Ministry also prepares fisheries management plans.

For purposes of this study, significant cold water, warm water, and migratory streams have been included as greenlands.

3.2.5 Summary -- Natural Areas in the GTA

Separate from this report, significant natural areas have been mapped on 13 map sheets at a scale of 1:50,000. A total of 975 individual natural areas in the GTA have been identified.

Regional Municipality of Halton

Most of the significant natural areas in Halton are associated with the Niagara Escarpment and the river valleys of Grindstone Creek, Bronte Creek, Sixteen Mile Creek, and Blue Spring Creek.

Thirty ANSIs are found in Halton, two-thirds of them on the Escarpment.

Almost 40 per cent of all wetlands in the GTA are found in Halton (98 out of 267). Most of the wetlands are considered locally significant. The provincially and regionally significant

FIGURE 1

NUMBER OF GREENLAND FEATURES/AREAS IN GREATER TORONTO AREA BY MUNICIPALITY

GREENLAND ELEMENT	MUNICIPALITY					GTA TOTAL
	PEEL	HALTON	YORK	METRO TORONTO	DURHAM	
Provincially Significant Life Science ANSI's	6	11	9	4	10	40
Provincially Significant Earth Science ANSI's	8	8	6	3	4	29
Regionally Significant Life Science ANSI's	10	11	15	7	4	42
Total ANSI's	24	30	30	14	18	111
Provincially Significant (Class 1 + 2) Wetlands	5	10	7	1	20	43
Regionally Significant (Class 3) Wetlands	6	6	6	2	12	32
Locally Significant (Class 4 to 7) Wetlands	21	82	37	2	49	192
Total Wetlands	32	98	50	5	81	267
Coldwater Streams	4	11	10	0	21	36
Warmwater Streams	3	3	14	3	8	31
Migratory Streams	1	4	0	1	9	15
Total Streams	8	18	24	4	38	82
ESA's	48	39	64	50	82	283
Provincial Parks	1	1	2	0	1	5
Other MNR (Crown) Lands	0	4	2	0	6	12
Conservation Areas	7	11	20	1	17	56
Other Cons. Auth. Lands	32	25	20	24	16	117
Regional Forests	0	9	18	0	1	28
TOTAL	152	235	230	98	260	975

wetlands are generally situated on the Escarpment, associated with the headwater tributaries of Bronte Creek and the Credit River.

Halton has the fewest ESAs in the GTA -- 14 per cent of the total. However, it is significant to note that the majority of these are fairly large areas.

Virtually all the major watercourses in Halton support a significant fishery. The associated valleys also provide critical forested migration corridors for wildlife between Lake Ontario and the Niagara Escarpment.

With the general exception of the Niagara Escarpment and Parkway Belt West lands in Halton, the tablelands between the river valleys are largely devoid of natural vegetation and consequently contain few greenland natural areas.

Regional Municipality of Peel

Compared to Halton, Peel has considerably fewer natural areas (152 vs 235). This is due largely to the Peel Plain, an extensive agricultural area. With the exception of the Credit River and the Etobicoke Creek, most of Peel's significant natural areas occur in the northern part, the Town of Caledon.

Nine of the 24 ANSIs in Peel are associated with the Credit River; the others are found in the Caledon Hills. Two of the largest individual ANSIs in the GTA, both of them provincially significant earth-science features, occur south of Mono Mills in the Town of Caledon.

Only six of the 32 wetlands in Peel are found south of the Oak Ridges Moraine Area. The provincially significant wetlands are associated with the headwater tributaries of the Credit River.

The upper branches of the Credit River and the Humber River support resident cold water fisheries. The Credit River is an important migratory fish stream.

Forty-eight ESAs have been identified in Peel, representing 17 per cent of the total number of ESAs in the GTA. Again, the vast majority of these are found in the northern parts of Peel.

Municipality of Metropolitan Toronto

Approximately 10 per cent of all the significant natural areas identified in the GTA occur in Metropolitan Toronto. The majority of these are found in the Humber, Don, and Rouge valleys. Four provincially and three regionally significant ANSIs are found in the Rouge valley.

Only four (less than two per cent) of the wetlands in the GTA are found in Metropolitan Toronto. The wetland at the mouth of the Rouge River is provincially significant and the one at the mouth of the Humber River is regionally significant. The two others, on the east branch of the Don River and in Highland Creek, are locally significant.

A total of 50 ESAs are found in Metropolitan Toronto. Many are small, isolated areas, such as remnant woodlots and wooded ravines.

Water quality and poor aquatic habitat are problems for fisheries in Metropolitan Toronto. The lower portion of the Humber River has a migratory fish run, while Etobicoke Creek, Don River, and Rouge River contain warm water fisheries.

Many of the valley lands of the major river systems in Metropolitan Toronto (the Humber, Don, and Rouge Rivers) are publicly owned, providing a variety of recreation opportunities and carrying out important flood control functions.

Regional Municipality of York

York contains 230 significant natural areas (23 per cent of the GTA total). This number is attributable largely to the Oak Ridges Moraine Area and the Lake Simcoe shoreline.

Thirty ANSIs are found throughout York. A higher concentration of regionally significant life-science sites and provincially significant earth-science sites are found in the Towns of Richmond Hill and Whitchurch - Stouffville.

Many of York's provincially and regionally significant wetlands are in the form of large swamp forests associated with river systems draining north into Lake Simcoe. As well, many of York's 37 locally significant wetlands are found in the Lake Simcoe drainage basin.

Many of the ESAs in York are also wetlands and/or ANSIs. Eight ESAs are offshore shoals and near-shore areas of Lake Simcoe and Georgina Island, significant for fish spawning and rearing.

Twenty-four significant fisheries streams (10 cold water and 14 warm water) occur in York. This high number is due to the presence of the Oak Ridges Moraine Area, which serves as the headwater for many streams flowing to Lake Ontario and Lake Simcoe.

York contains several reforested areas managed as regional forests. A portion of the Town of Whitchurch-Stouffville near

Ballantree contains ten large reforestation plots, each managed as a regional forest.

Regional Municipality of Durham

The abundance of significant natural areas in Durham, like York, is influenced by the presence of the Oak Ridges Moraine Area.

In addition, the Moraine in Durham is the source area for several streams draining into Lake Scugog.

A large marsh at the south end of Lake Scugog constitutes the largest provincially significant life-science ANSI in the GTA.

Eighty-one wetlands (30 per cent of the total number of the GTA) can be found in Durham.

Twenty of the GTA's 43 provincially significant wetlands and 12 of its 32 regionally significant wetlands are in Durham.

Approximately one-third of the 283 ESAs in the GTA are found in Durham.

In comparison with the other regional municipalities, Durham contains a large number (21) of cold water fishery streams. Most of these are watercourses, or portions of watercourses, draining into Lake Ontario. Relatively few of Durham's cold water streams are found in the Lake Simcoe or Lake Scugog drainage basins.

Like York, Durham, near Orono and Kendal (Town of Newcastle) and Port Perry (Township of Scugog) contain several large tracts of reforested land.

3.3 Significant Cultural and Archaeological Areas

For purposes of this study, the Ministry of Citizenship and Culture's definition of features of significant cultural and archaeological interest has been used. Significant sites are those that exhibit one or more heritage attributes associated with historical, architectural or archaeological significance.

Actual heritage attributes used to define significance are similar to the natural/physical criteria used in the identification and evaluation of ANSIs and ESAs. In both cases, the notion of "significance" embraces the concepts of representativeness, uniqueness, scarcity, high quality, high diversity, and scientific/educational value.

This study of regional greenlands did not focus on individual buildings or structures of historical significance. It is believed that this level of interest is more appropriately addressed by Local Architectural Conservation Advisory Committees (LACACs).

In certain situations, however, individual buildings have been grouped together, as at Black Creek Pioneer Village. The village is considered to be a Metropolitan Toronto area tourist attraction catering to thousands of visitors each year. It also serves to provide an educational experience for numerous school children.

Areas of known or potential archaeological significance are difficult to identify because of size, particularly when mapping is attempted at a scale of 1:50,000. But more important, due to the sensitivity to disturbance and the need for protection, it is the general practice of the Ministry of Culture and Communications not to disclose the location of areas of known or potential archaeological significance. In some cases, archaeological sites are in areas already considered to be greenlands. For example, significant archaeological areas in the GTA have been found in or immediately adjacent to river valleys. This is logical because water has always been used for drinking, transportation, commerce, and recreation.

Although there are relatively few known sites of archaeological significance in the Oak Ridges Moraine Area, recent investigations have shown that the area may well contain sites representative of native cultures dating back 3,000 to 11,000 years. The kettle lakes, wetlands, and river valleys of the Moraine Area are the most likely to contain such sites (Gartner Lee, 1990).

Notwithstanding the absence of more detailed information, cultural and archaeological areas of significance are considered to be greenlands for purposes of this report.

3.4 Valley Systems

There are approximately 65 river valley systems in the GTA with outlets draining into Lake Ontario, Lake Simcoe or Lake Scugog. They vary in size and length, with two of the larger ones -- the Credit River and the Humber River -- rising in areas outside the GTA. Some valley sections are well defined, densely treed, and aesthetically very pleasing. Other sections are smaller, with ill-defined valleys making it sometimes difficult to determine where the valley stops and the tableland starts.

The fact that some sections of river valleys may be small does not mean they are unimportant. Small tributaries are often headwater or feeder streams or function as fish nursery areas.

Within the GTA, the river valleys are the backbone of a regional greenlands system. The valleys, in many areas, represent the largest tracts of undeveloped, natural spaces. Valleys can provide continuous corridors for the movement of wildlife and watercourses can accommodate the migration of fish. The larger valleys can also provide for the movement of people via trail systems for hiking, cycling, jogging, cross-country skiing, etc.

Specific sections within valleys are considered significant for their biological, geological, hydrological, fisheries, or archaeological attributes; but for purposes of this report, all valley systems are considered as significant regional greenlands.

Some valleys have more functions than others, but all valleys perform some natural function.

3.5 Niagara Escarpment

Although not a primary area of concern in the context of this particular study, the Niagara Escarpment must be addressed to some degree.

The Niagara Escarpment is the most dominant topographic feature in southern Ontario, stretching some 725 kilometres (450 miles) from the Niagara River to the tip of the Bruce Peninsula. Within the GTA, it traverses the regional municipalities of Halton and Peel along a north-south axis.

The Niagara Escarpment is a massive ridge of sedimentary rock dating back 400-500 million years. Over its entire length, the Escarpment contains more than 100 sites of geological significance. It also contains a wide diversity of plants and animals, many of which are rare, threatened, or endangered. As well, the Escarpment contains the headwaters of many of the major rivers in Halton and Peel.

Within the GTA, numerous significant natural-area greenlands are found in the Escarpment area. Many of these sites have been accorded multiple status (i.e., areas that have been identified as both earth-science and life-science ANSIs and are also considered ESAs and/or wetlands), thus attesting to the significance of the Niagara Escarpment.

In February of this year, the Niagara Escarpment was named a biosphere reserve by the United Nations Educational, Scientific and Cultural Organization (UNESCO). This designation confirms the importance of the Niagara Escarpment internationally as well as locally.

3.6 Oak Ridges Moraine Area

The Oak Ridges Moraine Area is worthy of special mention. The Moraine represents one of the most prominent physiographic features in southern Ontario. It also performs an important hydrogeologic function, serving as a groundwater recharge/discharge area.

The Oak Ridges Moraine stretches from the Niagara Escarpment to the Trent River, some 160 kilometres (100 miles) in length. It varies in width and, in some areas it is almost non-existent. The Moraine forms the height of land dividing the streams draining into Lake Ontario and those draining into Lake Simcoe and Lake Scugog (Chapman and Putnam, 1984).

Over the years, the Oak Ridges Moraine has been defined according to various perspectives -- e.g., physiographic, geologic, etc. It is not the intention here to enter into a scientific discussion as to what constitutes the Moraine but, rather, to define an area of interest for purposes of this report. Therefore, the term "Oak Ridges Moraine Area" is used to include the Moraine proper, plus the north and south slopes, where many watercourses have their sources. More specifically, the southern boundary is defined by the 244-metre (800-foot) topographic contour that is physiographically part of the south slope. The northern limit is defined as the extent of ice-contact stratified drift on the north slope of the Moraine (see Map 3). Ice-contact stratified drift is the term given to materials deposited in contact with melting glacial ice.

Within the Greater Toronto Area, the Oak Ridges Moraine Area lies in portions of the Regions of Peel, York, and Durham. It extends for approximately 90 kilometres (56 miles) and varies in width from about four kilometres (2.5 miles) at its narrowest point just south of Lake Scugog, to about 24 kilometres (15 miles) at its widest point in the Town of Whitchurch-Stouffville.

As in the case of the Niagara Escarpment, the Oak Ridges Moraine contains many significant natural area greenlands. In the majority of cases, individual areas have multi-designations (e.g., ANSIs and ESAs). Approximately 45 ANSIs and ESAs are found in the Moraine area in the GTA.

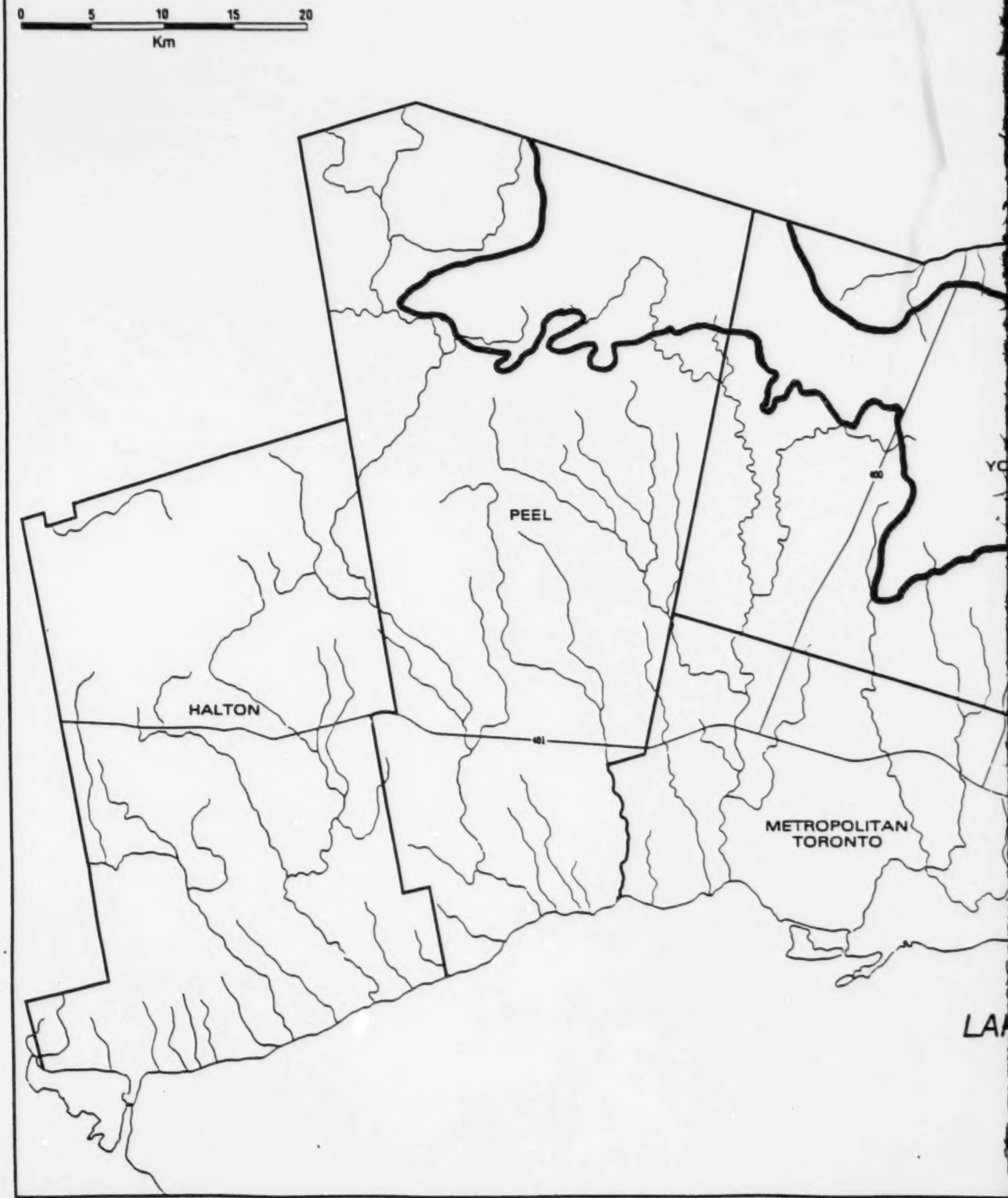
3.6.1 Topography

The terrain of the Moraine Area varies, but many portions are characterized by a hummocky or hilly appearance, sometimes referred to as "knob and kettle" topography. It is this landscape which many people associate as being the Moraine. The Moraine is the result of glacial action and the deposition of glacial drift material. The drift material ranges in thickness from 152 metres (500 feet) to 203 metres (665 feet) and is the thickest build-up of unconsolidated glacial material in Ontario (Chapman and Putnam, 1989).

The Oak Ridges Moraine Area is dotted with a number of kettle lakes, the product of glaciation during which large chunks

Greater Toronto Area

OAK RIDGES MORAINE A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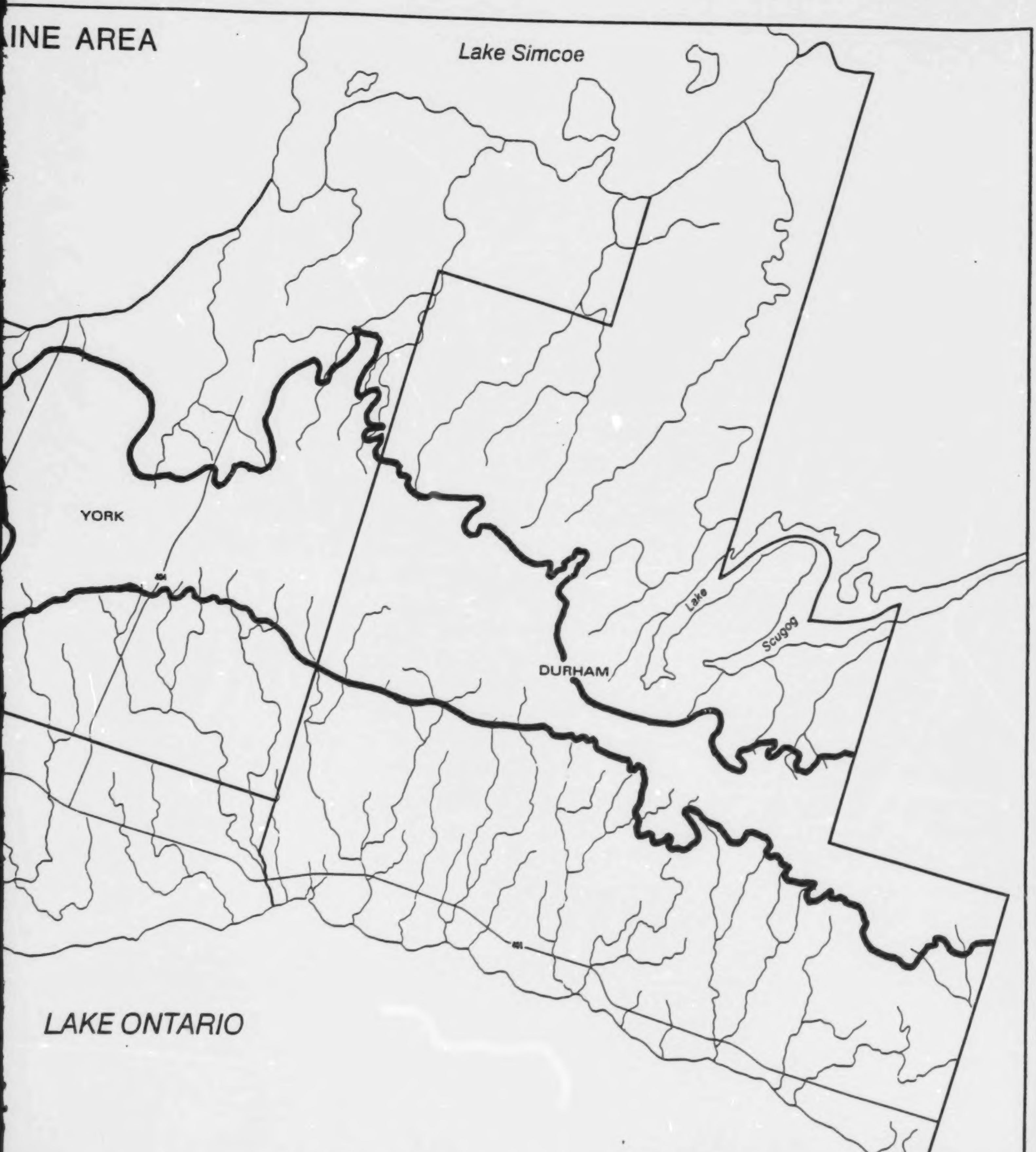
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Lake Scugog
DURHAM
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LAKE ONTARIO
MAP 3

of ice were trapped in depressions and melted. Kettle lakes are spring-fed and generally have little surface drainage (i.e., watercourses flowing in or out). Some kettle lakes, such as Lake Wilcox and Musselman Lake, have attracted summer resorts and cottage developments. Today, however, with increased development pressures and more permanent forms of development (e.g., single family dwellings vs. cottages), the quality of some lakes is being threatened, raising questions of their future viability (e.g. swimming, fishing, etc.).

3.6.2 Soils

The soils of the Moraine can be divided into three basic types: 1) sand and gravel, sandy loam; 2) silt, silt loam or loam; and 3) clay loam. Sand and gravel are the coarsest material, containing the largest grain size, while clay contains the finer, more compacted material. As a result of the predominance of sand and silts, the soils in the Moraine are well drained and contain little organic material. In those areas where the slopes permit farming, additions of manure and fertilizer are required to maintain soil fertility. These soils are "droughty", and in combination with the hilliness and steepness of the terrain, are susceptible to wind erosion and therefore should be maintained with some type of vegetative cover. Typical tree stands include red and white pine, red oak, hickory, white birch, and sugar maple.

The clay loam soils found in the Moraine are not as quick draining as the more sand and gravelly soils. Because of this poor drainage, the wetlands and kettle lakes of the Moraine are found in association with these types of soils.

3.6.3 Surface Water

The Moraine Area is the source of many streams (see Figure 2). However, the Moraine itself is largely devoid of streams. The water drains downward through the sand and gravel and travels laterally when it reaches less pervious layers and intersects the surface along the slopes of the moraine in the form of springs. One significant exception is the main branch of the Humber River, which cuts through the Moraine and has its source in the Niagara Escarpment. (Chapman and Putnam, 1984).

Some of the small wetlands that create the headwater streams exist because groundwater discharges in those locations. Taken individually, they may appear insignificant but, considered collectively, they are the origins of more than 30 major watercourses or major tributaries of watercourses. Therefore, filling in these wet areas, decreasing groundwater recharge or increasing groundwater extraction could affect the maintenance and distribution of wetland/headwater stream areas.

The Fisheries Management Plans of the Ministry of Natural Resources' Maple and Lindsay Districts identify many of the headwater streams in the Oak Ridges Moraine Area as supporting a cold water fish habitat. Problems associated with increased urbanization -- e.g., poor water quality, removal of adjacent shade vegetation, piping of streams, etc. -- could threaten the continued viability of cold water streams.

Figure 2

HEADWATER STREAMS
IN THE OAK RIDGES MORAINE AREA

I. Streams Flowing South to Lake Ontario

Peel Region

- Silver Creek (Credit River)
- Little Credit River (Credit River)
- Lindsay Creek (West Branch Humber River)
- Centreville Creek (Humber River)
- Humber River
- Cold Creek (Humber River)

York Region

- East Humber River
- Rouge River
- Bruce Creek (Rouge River)
- Little Rouge Creek
- West Duffin Creek

Durham Region

- Duffin Creek
- Lynde Creek
- Oshawa Creek
- East Oshawa Creek
- Bowmanville Creek
- Soper Creek
- Wilmot Creek

II Streams Flowing North to Lake Simcoe

Peel Region

- Schomberg River

York Region

- Schomberg River
- Holland River
- Bogart Creek (East Holland River)
- Black River

Mount Albert Creek (Black River)
Vivian Creek (Black River)

Durham Region

Pefferlaw Brook
Uxbridge Brook
Beaverton River

III Streams Flowing North to Lake Scugog

Durham Region

Nonquon River
Eastcross Creek

3.6.4 Baseflow

Runoff into a watercourse consists of two basic components, surface or overland flow and subsurface groundwater or baseflow.

The calculation of baseflow, or the groundwater component of a watercourse, is complex and difficult to determine. Over the length of a watercourse (i.e., headwater to mouth), the contribution of baseflow can vary. Generally, the further removed from the headwater, the more significant the contribution of surface or overland flow.

Some studies on baseflow for various sub-basins in the GTA have been undertaken.

For the Moraine portion of the Bowmanville Creek and Wilmot Creek, baseflow was calculated as 60.3 per cent and 88.2 per cent, respectively, of total streamflow. Farther down the south slope of the Moraine for these same creeks, the contribution of baseflow dropped to 54.9 per cent for Bowmanville Creek and 70.1 per cent for Wilmot Creek. A study of a small portion of the headwaters of Duffin Creek calculated baseflow contribution as 94 per cent within that particular area. Baseflow calculations for the central and lower reaches of Duffin Creek and Rouge River, as a percentage of total streamflow, ranged from 37 to 61 per cent in the Duffin Creek basin and from 27 to 30 per cent in the Rouge River basin. Baseflow calculations over the entire Holland and Black River watersheds amounted to approximately 34 per cent of total streamflow. (Intera Kenting, 1990).

The generalization that can be made from the foregoing is that, while the actual amount can vary along the length of a watercourse, baseflow provides a significant portion of total streamflow. This is particularly true in the headwater portions of watercourses. As a result, any major disruption in groundwater supplying streams can have major consequences.

3.6.5 Aquifer Systems

Aquifer systems in the Oak Ridges Moraine Area can be divided into shallow systems and deep systems. While there is no well-defined break between the two, shallow flow systems are generally defined as the occurrence of groundwater at depths up to 76 metres (250 feet). The deep systems, found along the Yonge Street corridor (i.e., Newmarket, Oak Ridges, and Aurora), occur at depths of between 91 and 122 metres (300 and 400 feet).

Municipalities in the Moraine Area that depend on groundwater supplies include Caledon East, Inglewood, Mono Mills, Palgrave, King City, Uxbridge, Stouffville, Aurora, Newmarket, and Oak Ridges.

3.6.5.1 Shallow Aquifer Systems

A groundwater divide exists beneath the Oak Ridges Moraine which generally conforms to the surface drainage divide. North of the divide, groundwater flows toward Lake Simcoe, while to the south, it flows toward Lake Ontario.

The largest mapped aquifer, sometimes referred to as the Oak Ridges Aquifer Complex, stretches from Durham Region in the east, across Aurora and the southernmost portion of the Holland-Black River Basin and into the adjoining upper Nottawasaga River basin. While there have been studies in Peel Region on groundwater resources, no attempt has been made to map the extent of the aquifer complex there.

Along the ridge or groundwater divide of the Moraine, permeable sands and gravels extend from the surface to the water table. This condition is referred to as an "unconfined aquifer", where the water level is defined by the water table. Within the aquifer complex, low-permeability layers of fine silt and clay can exist at different levels. These layers trap infiltrating water to form a perched water table. Perched water tables occur above the normal regional water table. Confined conditions occur when an aquifer is overlain by less permeable silts and clays. In this situation, the groundwater is under artesian pressure.

Groundwater yields in the Moraine aquifer complex are generally adequate for domestic and livestock requirements. However, problems can be encountered in shallower wells, particularly if requirements increase substantially or if adjacent land uses change dramatically.

Groundwater recharge into the shallow aquifer complex occurs over a considerable portion of the Oak Ridges Moraine Area. Rates of infiltration, however, are extremely variable due to the variability of surface materials. Where the soil is fine-grained, recharge is impeded and confining conditions exist. In other areas, such as the vicinity of Musselman Lake, the presence of higher-permeability materials suggests the occurrence of "windows". These windows of high recharge can perhaps be identified from depressions in the water table, but this type of analysis would require very detailed investigation, including installation of monitoring wells and measurement of water levels.

North of Musselman Lake and extending west to Aurora, the shallow aquifer complex is largely unconfined and is an area of relatively rapid recharge. These unconfined portions of the shallow aquifer complex should be considered as hydrologically significant and should be identified by means of a detailed review of well logs, hydrogeological reports, and other available information (Intera Kenting, 1990).

Several studies have attempted to identify areas of significant recharge within the Moraine Area. However, the identification of specific areas of significant recharge for the purposes of applying land-use or development controls would require a comprehensive evaluation of the entire Oak Ridges Moraine Area.

Groundwater quality in the shallow aquifer complex is generally good to excellent. Notwithstanding the good quality, unconfined aquifers, particularly those at a shallow depth, are susceptible to contamination. Commonly occurring contaminants include road salt, as indicated by high chloride levels, and nitrate from septic systems, and manure and fertilizer from agricultural activity.

The sensitivities of the shallow aquifer system, in terms of both water quality and quantity, should always be considered when reviewing existing or proposed land uses within the Oak Ridges Moraine Area.

3.6.5.2 Deep Aquifers

The deep aquifers are the source of major municipal water supplies in Newmarket, Aurora, and Oak Ridges. These aquifers occur at depths below the Oak Ridges (shallow) Aquifer Complex and the top of bedrock. They lie within a major bedrock depression or valley known as the Laurentian River Channel. During the last period of glaciation, before the development of the Great Lakes, this system provided drainage from Georgian Bay to Lake Ontario.

A review of municipal well reports indicates that the deeper aquifers occur at depths ranging from about 88 to 104 metres (290 to 340 feet) for Aurora; 100 to 113 metres (330 to 370 feet) for Newmarket; and about 114 to 125 metres (375 to 410 feet) for Oak

Ridges, compared to maximum depths of about 76 metres (250 feet) for the shallow aquifer complex.

Due to their depth, the deeper aquifers are not as susceptible to changes in land use within the Oak Ridges Moraine or to surface contaminants as are the shallow aquifers.

Waters in the deep aquifers are old and have been isotopically dated at between 1,800 and 4,000 years. This water has percolated through the overlying fine-grained sediments due to the difference in hydraulic head between the surface and the deeper aquifer. The vertical downward gradient is increased even more by the pumping of the municipal wells, inducing leakage from the overlying sediments.

On the basis of an estimated annual infiltration rate of 30 millimetres to the deep aquifers, each square kilometre of deep aquifer is capable of providing 80 cubic metres per day without causing a decline in water levels. This number provides a very rough indication of the maximum daily rate of groundwater removal from all sources in the deep aquifers that can be sustained by natural recharge.

From data on groundwater production from municipal wells in the deep aquifers, it is obvious that, over the past ten years, groundwater demand has risen significantly. In York Region at present, there is concern starting to be expressed about groundwater withdrawal exceeding recharge, and the possible interference with municipal supplies caused by the withdrawal of groundwater from the deep aquifers.

As well, a general concern over groundwater led Peel Region recently to undertake an investigation of its groundwater resources. This investigation is currently ongoing (Intera Kenting, 1990). More research is required into the available supplies of groundwater, from both the shallow and deep aquifer systems, and the demands being placed on the resource, now and in the future.

3.6.6 Land-Use Planning

Within the GTA, the Oak Ridges Moraine Area crosses three regional municipalities (Peel, York, and Durham) and within these, 14 local municipalities:

Peel: Town of Caledon;
York: Township of King and the Towns of Vaughan, Richmond Hill, Aurora, Newmarket, Whitchurch-Stouffville, East Gwillimbury; and
Durham: Town of Pickering, City of Oshawa, Town of Whitby, Town of Newcastle, Township of Uxbridge, Township of Scugog.

A fundamental shortcoming of most of the official plans, with the possible exception of those of Durham and Vaughan, is the absence of either a geographic or comprehensive written definition for the Oak Ridges Moraine. With the absence of any delineation or definition, policies do not exist to address the long-term treatment of the Moraine.

The Durham and Vaughan plans outline the extent of the Oak Ridges Moraine in their various land-use schedules. This facilitates the interpretation of policies in the text and in determining whether or not a particular development encroaches on the Moraine.

In 1974, the Region of York undertook a study of the Oak Ridges Moraine. The study geographically defined the feature and established development guidelines. These guidelines were adopted as council policy, but neither the policy nor reference to it is found in York's current draft regional Official Plan.

In the Region of Peel, where the Moraine is least apparent, there is no reference of any kind to the Oak Ridges Moraine in the draft Official Plan.

The lack of definition and the inconsistent approach to the Oak Ridges Moraine have resulted in a variety of official plan designations of the Moraine at the regional level. The predominant designations are as follows:

Peel:	Rural, Rural Estate Development Planning Area (Palgrave), Niagara Escarpment Plan (west end), several designated settlement areas, one sanitary landfill site;
York:	Forests and Wetlands, Agriculture, Urban Centre (Richmond Hill, Aurora), Rural Area (Stouffville); and
Durham:	Oak Ridges Moraine Boundary, Major Open Space, Environmentally Sensitive Areas, Several Hamlets.

Variation in land-use designation at the local municipal level can be even more pronounced. For example, in the Town of Richmond Hill, the municipality in the Moraine with the greatest development pressures at this time, designations of the Moraine not already in the developed urban limits include; Rural, Urban Fringe, Major Open Space, Hazard Lands (corresponding to river valleys), Aggregate Resource Extraction Area, and Hamlet. In the urban area the designations include: Residential, Industrial, and a variety of commercial designations.

At the regional level, there is some awareness of the cumulative effects of development. But, although the Moraine extends beyond a single regional boundary, the level of awareness tends to be confined within particular jurisdictions.

At the local municipal level, where much of the day-to-day planning takes place, there is little opportunity to assess the cumulative effects of a site-specific application on the Oak Ridges Moraine. At such a site-specific level, the most appropriate course of action would be to assess an individual proposal in the context of an overall established policy framework for the Moraine.

It is apparent that land-use planning for the Oak Ridges Moraine is not consistent.

In the absence of one definition of the Oak Ridges Moraine, one set of clearly defined objectives, and one implementing strategy, it will be difficult to appropriately take into account the Oak Ridges Moraine Area in the land-use planning and development process.

To establish a consistent approach, it will be necessary to have similar objectives and policies and a common understanding of what the Moraine is.

3.7 Open Space/Trail Systems

Within the GTA, much of the regional public open space is found in and adjacent to the major river valleys. Other public open spaces can be found in the Niagara Escarpment, the Oak Ridges Moraine Area, the Parkway Belt west (particularly in Halton), and the regional forests in York and Durham.

Because of incomplete public ownership or lack of appropriate controls and an overall focus, there is very little in the way of a regional trail system in the GTA.

The most notable trail system is the Bruce Trail along the Niagara Escarpment. Just outside of the GTA to the east is the Ganaraska Trail, another notable trail system. The Great Pine Ridge Trail, stretching the length of the Oak Ridges Moraine, is supposed to have been developed by equestrians. However, the exact location of this trail is often difficult to determine. In addition, there are various minor trails running through conservation areas or along portions of valleys.

A series of regional trail systems would not only provide high-quality hiking, cycling, and cross-country skiing opportunities, but would also serve to connect the major physiographic features of the GTA: the Niagara Escarpment, the Oak Ridges Moraine, the river valleys, and the Lake Ontario and Lake Simcoe shorelines.

In addition to continuing work on the Bruce Trail and the Ganaraska Trail, the establishment of a major east-west trail along the Oak Ridges Moraine should be actively considered. As well, consideration should be given to regional trail systems along the major river valleys. The following valleys are suggested in this regard:

- Grindstone Creek
- Bronte Creek
- Sixteen Mile Creek
- Credit River
- Humber River
- Don River
- Rouge River
- Duffin Creek
- Lynde Creek
- Oshawa Creek
- Bowmanville/Soper Creek
- Wilmot Creek
- Holland/Schomberg River
- Black Creek
- Pefferlaw Brook
- Beaverton River.

All trail systems and, in particular, the Oak Ridges Moraine Trail should, to the extent possible, run through or adjacent to tree-covered areas. In some locations, tree planting may be required. This would not only provide for a more enjoyable experience for the user, but would also assist in protecting vegetated corridors for the movement of wildlife.

One area where investigation should continue is that of converting abandoned railway routes to trails. Over the entire length of the Oak Ridges Moraine, for example, there are approximately 11 abandoned rail routes (John Fisher, 1990).

A number of organizations, such as the Peterborough Rails to Trails, the Ganaraska Trail Association, the Bruce Trail Association, and the Ontario Trails Council, are all actively interested in the use of abandoned rail lines. As well, a provincial interministerial committee is currently looking into alternative uses for abandoned routes.

Some municipalities in Ontario have joined forces to develop trail systems running through several different jurisdictions. Joint ventures of this kind should be actively encouraged.

It is recognized that further work would be required on such a regional system of trails and that its implementation would require an extended period of time. However, such a system of trails would provide recreational experiences that could rival those of any large urban area in North America.

3.8 Connecting Links

A key to any regional trail system is that it be continuous. But also important is the ability to easily move people on to a regional trail and to move people from one parallel trail to the next, thus creating mini-loop systems.

Although not formally a part of this study, local municipal parks are key in feeding into a regional system. Local parks and other public areas could provide vital access points into the major river valleys. Local parks, through a series of walkways and corridors, could be linked. The local park system could then be linked with the regional trail system.

Within the GTA, the major river valleys all run in a north-south direction. It is important, then, to also consider a series of east-west lateral connectors to move from valley to valley.

Ideally, connecting links should be "green". They can include local parks or greenways, utility corridors -- e.g., hydro, gas or oil lines, road rights-of-way, abandoned rail lines, etc. In more built-up areas, it may not always be possible to provide a green link. Residential streets may then have to be used to make the connection.

While connecting links in themselves are not part of greenlands as defined in this report -- their primary function often is to serve another use -- efforts to enhance such links through planting trees or shrubs should be encouraged.

3.9 Classifying Greenlands

Some greenlands, most notably wetlands and ANSIs, have been classified on a province-wide basis. On such a scale, ranking of areas helps add perspective to the allocation of time, effort, and resources required to maintain them.

However, provincial ranking systems have a tendency to be misunderstood or misinterpreted. In the case of the classification system for wetlands, Class I and II wetlands are considered provincially significant, Class III regionally significant and Class IV - VII locally significant.

It is often assumed that if a wetland is Class IV to VII, then it is not important because it is only locally significant. Also, the conclusion is often made that since a provincial ministry devised and carried out the classification, then the Province is responsible for all aspects of implementation and maintenance.

If greenlands are to be protected, they will be so only because of the co-operation and assistance of many government bodies and public groups. All will have to do their part. In this regard, municipalities have a role to play as the entities responsible for providing guidance for their own physical development while having regard to "relevant social, economic and environmental matters".

The Greater Toronto Area, with its high concentration of people and rapid urbanization, may well warrant special consideration regarding greenlands. If, for example, a municipality contains one or only a few wetlands, then that wetland(s), in that location, should be considered extremely important by the municipality regardless of how it is ranked under a province-wide system.

Along this same vein, the river valleys of the GTA, because they are generally less developed or less disturbed than the adjoining tablelands and thus more natural, should also be considered extremely important in their own right.

However, as it is recognized that the implementation of a regional greenlands strategy would occur over an extended period of time and that from time to time emphasis on particular aspects or areas may be deemed desirable, the ability to classify greenlands on some consistent basis may be beneficial or necessary.

What is suggested in the following is one possible classification system. Others may be proposed that are more appropriate than this one. The key is that all the various players in the various parts of the GTA should be working towards implementation with one common focus. As well, the following is an attempt to provide appropriate criteria with which to compare different areas. No attempt is made to actually classify individual regional greenlands areas. It is believed that such an exercise is better left to the agencies and groups more familiar with the individual areas.

The classification system proposed is generic enough that 1) direct comparison can be made among different types of greenlands, and 2) priority can be assigned to specific areas/features based on a consideration of their significance and/or sensitivity.

The greenlands classification system follows a two-tiered approach. The first (or upper) tier relates to the status that has been accorded the greenlands element (see Figure 3). In this context the term "status" relates to whether the specific greenland is of provincial or regional interest. ANSIs and wetlands, for example, are both subject to provincial policies. By contrast, ESAs and hazard lands are recognized more at the regional level in municipal official plans.

The greenlands classification system based on status, as described in Figure 3, assigns each greenland to one of four possible categories:

IA - areas/features of provincial interest exhibiting values related to their natural and/or physical attributes (e.g., ANSIs, Class I and II wetlands);

IB - areas/features of provincial interest exhibiting values related to their cultural/planning and management attributes (e.g., provincial parks and other MNR land);

IIA - areas/features of regional interest exhibiting values related to their natural and/or physical attributes (e.g. ESAs, Class III to VII wetlands); and

IIB - areas/features of regional interest exhibiting values related to their cultural/planning and management attributes (e.g., conservation areas and other conservation authority lands).

In addition to distinguishing between sites of provincial interest and those of regional interest, this level of classification also differentiates between greenlands of intrinsic value (i.e., areas exhibiting natural and physical qualities, irrespective of any social considerations) and greenlands of extrinsic value (i.e., areas that possess attributes or perform functions which are beneficial to society in general).

It should be noted that the dichotomies between I vs. II and A vs. B greenlands should not be interpreted as implying that "provincial" is more important than "regional" or that "intrinsic" values are more important than "extrinsic" values. The underlying assumption in this classification system is that all greenlands identified in this report are of importance.

Figure 4 is designed to prioritize different greenlands classified within the same status group in Figure 3. Greenlands can be prioritized either on the basis of 1) relative significance, or 2) need for protection, acquisition, etc., based on a consideration of key attributes.

FIGURE 3

CLASSIFICATION OF GREENLAND ELEMENTS ON THE BASIS OF STATUS

	I PROVINCIAL INTEREST [1]	II REGIONAL INTEREST [2]
A Natural/ Physical (intrinsic) values	Provincially Significant Earth Science ANSIs Provincially Significant Life Science ANSIs Class 1 & 2 Wetlands Critical Fish Habitat (Coldwater, Warmwater and Migratory streams)	Regionally Significant Life Science ANSIs Class 3 to 7 Wetlands ESAs Oak Ridges Moraine
B Cultural/ Planning & Management (Extrinsic) Values	Provincial Parks Other MNR (Crown) Lands (Prov. Nurseries, Prov. Fishing Area, Wildlife Management Areas) Niagara Escarpment Planning Area Parkway Belt West Utility Corridors	Conservation Areas Other Conservation Authority Lands (Resource Management Tracts, Fish & Wildlife Areas, Hazard lands) Regional Forests Trails

[1] Subject to provincial regulations or policies

[2] Subject to regional official plans

FIGURE 4

CLASSIFICATION OF GREENLAND ELEMENTS ON THE BASIS OF ATTRIBUTES

		CRITERIA	ELEMENT												
			EARTH SCIENCE ANSIs	LIFE SCIENCE ANSIs	WETLANDS	ESAs	CRITICAL FISH HABITAT	PROVINCIAL PARKS	CONSERVATION AREAS	OTHER MNR LANDS	OTHER CA LANDS	HISTORIC SITES	ARCHAEOLOGICAL SITES	UTILITY CORRIDORS	TRAILS
INTRINSIC VALUES	NATURAL	1. EGOSYSTEM REPRESENTATIVENESS													
		2. RARITY/UNIQUENESS													
		3. DIVERSITY/QUALITY													
		4. VITAL ECOLOGICAL FUNCTION													
		5. FRAGILITY/SENSITIVITY													
	PHYSICAL	1. LANDFORM REPRESENTATIVENESS													
		2. LANDFORM UNIQUENESS													
		3 VITAL HYDROLOGIC FUNCTION													
		4. CONNECTIVITY TO OTHER GREENLANDS													
		5. FRAGILITY/SENSITIVITY													
EXTRINSIC VALUES	CULTURAL	1. EDUCATIONAL VALUE													
		2. HISTORIC/ARCHAEOLOGICAL VALUE													
		3. SCIENTIFIC VALUE													
		4. RECREATIONAL VALUE													
		5. AESTHETIC VALUE													
	PLANNING & MANAGEMENT	1. FLOOD CONTROL/HAZARD LAND/ REFORESTATION													
		2. SUSCEPTIBILITY/REPLACEABILITY													
		3. PUBLIC ACCESS/OWNERSHIP													
		4. MANAGEMENT FEASIBILITY													
		5. NEED FOR PROTECTION													

A total of 20 attributes (or criteria) is listed along one axis of the matrix in Figure 4. These have been further classified into four generic classes: 1) natural, 2) physical, 3) cultural, and 4) planning and management. Each class contains five criteria. As indicated in Figure 3, natural and physical criteria relate to biotic and abiotic features/functions (in terms of their intrinsic value), while cultural and planning and management criteria relate to human uses of the greenlands (i.e., extrinsic values).

For the purposes of this study, each of the 20 criteria is given equal weight; in other words, each is considered to be of equal importance.

Ranking of greenlands is accomplished by determining how many criteria are satisfied by each. Those fulfilling the most criteria are assigned the highest priority. This ranking system can be adapted as required by giving greater weight to some criteria. For example, if the object of the ranking exercise is to determine which greenland area or feature should be given priority for protection, then greater importance could be given to the criteria which relate to its fragility and sensitivity to human disturbance, ownership (public vs. private), and need for protection.

3.10 Other Land Uses

Land within the GTA is used for a variety of purposes. In some instances different land uses are seen to be in direct competition or conflict with others. While all land uses are not always looked on favourably, they all, in their own right, contribute to the continued growth of the GTA.

When considering greenlands within the GTA, one must remain cognizant of the other uses that also do and could occur.

However, by the same token, when considering other land uses, one must remain cognizant of the natural attributes, sensitivities and functions of the land base and the overall significance of greenlands to a quality, living environment for the GTA.

Some of the other major land uses in the GTA include; agriculture, urban development, rural estate development, aggregate extraction, recreation (particularly golf courses) and waste disposal sites.

3.10.1 Agriculture

Agricultural lands include both crop and non-crop lands (the latter used for dairy, cattle, horses, etc.).

Within the GTA, approximately 330,000 hectares (817,000 acres), or about 48 per cent of the total land base of the GTA, is considered to be farmland. Much of the land in the Regions of Halton, Peel, York, and Durham contain good agricultural soils (i.e., Classes I, II, and III), approximately 67 per cent of the total land area. (Ministry of Agriculture and Food, 1990.)

There are more than 5,000 farms in the area and, in 1986, total cash receipts from these farms were more than $390 million, seven per cent of the provincial total (Ontario Ministry of Agriculture and Food, 1989). Croplands and working farms are important contributors to the provincial economy and agricultural resources.

Agricultural uses can impact greenlands through the filling in of wetlands and the removal of farm woodlots for the purpose of creating more cropland. Improper tillage practices, the continuous use of fertilizers and the uncontrolled access of livestock to creeks and stream can result in water quality problems.

However, many farmers today do use good land and soil stewardship practices. There is an increasing recognition that the long term health and productivity of the resource base - the soil - is as dependent or more so on good conservation practices, as it is on modern advances.

While no group appears to keep records on the amount of rural land that is permanently lost to development, statistics gathered by the federal government indicate, in a general sense, that there has been a significant loss of farmland in recent years. According to Statistics Canada, between 1981 and 1986 the total amount of farmland in the GTA was reduced by more than 28,750 hectares (71,000 acres) or some eight per cent of the total amount. This is slightly higher than the provincial average of seven per cent (Statistics Canada Census, 1981 and 1986).[2]

The long term viability of farming in the GTA lies beyond the scope of this study. However, the unnecessary loss of agricultural lands in the GTA should be prevented. Agricultural lands, as part of rural landscapes, provide a tie to our heritage and a sense of our past, as well as contributing to a diversity of lifestyles that is an important component of a healthy "total" environment.

3.10.2 Urban Development

There is no disputing that a very sizeable increase in the number of people living in the GTA will occur over the next 10 years. What must be addressed is how that increase occurs.

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[2] Source STATS CAN 1981 and 1986 census. According to Statistics Canada, a "farm" is any agricultural holding with sales totalling $250 or greater during the 12 months prior to the census.

At present, approximately 20 to 25 per cent of the GTA is urbanized. As mentioned previously in this report, average densities in the outer regional municipalities are relatively low. If this practice continues, large areas will be converted from open space and rural areas to urban lands.

Low densities are not only a concern as they affect the loss of rural lands; they can also present problems for water and sewage infrastructure, public transit, highways, and other roadway requirements. The cost of services and infrastructure in low density urban areas is generally much higher compared to more intensely developed areas.

These and other concerns are currently being examined by the Greater Toronto Area Co-ordinating Committee in a study of different development scenarios for the future of the GTA (Urban Structure Concepts Study).

If sufficient supplies of land are to be left available for other uses (e.g. greenlands, rural, etc.), then moves to more dense development patterns in the future will be required.

3.10.3 Rural Estate Development

The scenic beauty of the countryside or the desire to live "out of the city" has given rise to rural estate or urban fringe developments.

Currently, in the GTA there is a significant segment of the population living on rural lands; however, most are not farmers. More than 216,000 people live in rural areas in the Regions surrounding Metropolitan Toronto, while only 15,000 are involved in farming.

Rural estate residential lots are usually one to two hectares (two to five acres) in size and are generally considered to be self-contained, because they are mostly on individual sewer and water systems.

They are land-extensive -- i.e., extremely low-density, and cannot be considered "affordable housing".

In the Town of Caledon, Region of Peel, an area known as the Palgrave Estate Area has been designated for estate residential. Site investigation requirements -- e.g., soil and drainage classification, groundwater sampling, vegetation, wildlife, etc. -- in the Palgrave area are perhaps the most stringent for estate residential development in the GTA.

In most other municipalities, proposed rural estate residential development is generally permitted through an Official Plan Amendment. The documentation of information required to support a development application can vary not only between municipalities but also within municipalities. No figures are available on the amount of land used for estate residential in the GTA.

One of the major concerns with estate residential development is the impact of septic systems on well water quality, particularly the production of nitrate and the disposal of organic solvents in septic systems.

The well-drained characteristics of some soils in the GTA, particularly across the Oak Ridges Moraine Area, optimize sewage effluent infiltration. As a result, effluent travels further, faster, and in a more concentrated state, thus potentially causing water-quality problems for groundwater or possibly contaminating nearby wells.

One way to lessen the impact of septic effluent is to create even bigger lots, thereby increasing the amount of dilution. However, this would take even more land out of open space or rural use and make the prices of such homes even less affordable than they are.

Studies of rural villages and hamlets have also shown that concentrating development can lead to contamination of well water due to the extreme proximity of septic systems.

Therefore, present septic tank and tile field design may be inadequate for certain housing densities or for certain areas with rapidly drained soils. Alternative sewage treatment systems using designs and filter materials that are more effective could be investigated and implemented on a trial basis. Another alternative is to investigate the use of communal sewage treatment facilities, in which two or three dwellings share one system or one system is installed for an entire estate residential subdivision.

3.10.4 Aggregate Extraction

In 1987, there were more than 230 licensed pits and quarries in the GTA, producing more than 43 million tonnes (47 million tons) of sand, gravel, and crushed stone annually. This represents approximately 22 per cent of total aggregate production in Ontario. Approximately 70 million tonnes (77 million tons) of aggregate are used in the GTA annually. The balance of demand generally is met from operations in the counties surrounding the GTA (Ontario Ministry of Natural Resources, 1990).

Approximately 70 per cent of the aggregates extracted in the GTA comes from two sources, the Niagara Escarpment and the Oak Ridges Moraine (Aggregate Producers of Ontario, 1990).

In the past, aggregate extraction was conducted in a haphazard and uncontrolled manner with very little thought to rehabilitation and post-extraction use. The need to control aggregate extraction resulted in the Pits and Quarries Control Act of 1971, which has recently been replaced by the Aggregate Resources Act. In 1986, the Province issued its Mineral Aggregate Resources Policy Statement (MARPS). The thrust of the policy statement is to help ensure that sites with high potential for extraction are suitably recognized in the land-use planning process.

Aggregate extraction continues to attract much attention and concern. Extraction results in the physical modification of land forms and the removal of vegetation and top soil. If carried out improperly it can result in the disturbance of natural drainage, the potential loss of farmland, and impact on rural residents through traffic, noise or dust problems.

Specifically in terms of groundwater, the following situations may arise:

- Groundwater Interference
    - excavation of a pit or quarry through a perched aquifer could cause excessive drainage and loss of the aquifer; and
    - excavation of a pit or quarry below the regional water table could produce a lowering or drawdown of the water table, particularly if the quarry is dewatered, and perhaps lower water levels in nearby private wells.

- Ground Compaction
    - the use of heavy equipment during normal pit or quarry operations could cause ground compaction and could reduce the permeability of the ground surface.
- Impacts of Siltation
    - siltation ponds associated with washing operations can plug porosity of the ground surface and impede infiltration; and
    - silty wash water discharged to streams increases stream turbidity that could result in the destruction of fish habitat.

Where pit or quarry operations occur near or below the water table, impacts on water quality should be a major consideration. Chemicals used for dust control, and other processes and fuels, can result in contamination if spilled or improperly used.

While pit or quarry operations can affect infiltration by compaction and siltation, rehabilitation of sites through deep cultivation and recontouring can enhance the recharge characteristics of pits or quarries by containing runoff on site. In the case where a pit or quarry is developed below the water table, and a permanent pond is produced, a net loss of water could occur from the site due to evaporation. However, as indicated, attention to recontouring may minimize this potential problem.

One of the major emphases of the recent Aggregate Resources Act is site rehabilitation upon completion of extraction. A new licence issued must be accompanied by an approved rehabilitation plan. Through topsoil regrading and landscape redesign, rehabilitated sites can be used for agriculture or recreational purposes, or planted for forest cover or wildlife habitat. The rehabilitated site should blend in with the surrounding area as much as possible. Final uses are determined by the municipality through the Planning Act and any other appropriate legislation.

Through the Aggregate Resources Act, the Ministry of Natural Resources is phasing in, over a four-year period, the requirement for existing licence holders to submit and receive approval for site rehabilitation plans. The intent is to have actual extraction staged over a licensed area and to have each stage rehabilitated upon the completion of extraction, as opposed to waiting to rehabilitate the entire licensed area at a later date.

Aggregate extraction does result in the permanent modification of the landscape. Noise, dust, truck traffic, and groundwater and other environmental impacts must be carefully assessed and addressed through established, approved procedures.

Transportation or haulage is a major component of the cost of aggregate materials. Reducing or eliminating aggregate extraction from within the GTA could result in substantial increases in cost as greater travel distances would be involved The licensing of new areas within the GTA for extraction must weigh the need for aggregate materials to support continued development against the social and environmental impacts within the vicinity of a proposed pit or quarry, both during and after extraction. In this regard, the municipalities should play a more active role in determining the land use for a site upon rehabilitation.

3.10.5 Golf Courses

Largely because of land prices and proximity to Metropolitan Toronto, rural lands are well suited to the development of golf courses. The Oak Ridges Moraine Area, with its rolling topography, is especially interesting, as it makes for a more technically challenging course.

Some concern has been expressed about the irrigation demands of existing and proposed golf courses competing with municipal supplies from the deeper aquifers in York Region.

Other concerns relate to the impact of fertilizers and pesticides applied to golf courses on nitrate and pesticide concentrations in shallow groundwater supplies and adjacent streams.

The rise in the number of golf courses may require the monitoring of courses to assess impacts on water quantity and quality.

3.10.6 Waste Disposal Sites

Numerous waste disposal sites exist throughout the rural and urban areas of the GTA. Generally, these sites contain municipal garbage; however, the disposal histories of some sites are not very well known.

Waste disposal sites may have an impact on groundwater and surface water quality. They require a certificate of approval from the Ministry of the Environment to operate and are subject to technical studies on their potential impact on the environment.

Rehabilitation plans for landfill sites must be approved as a condition of operation. Once full, landfill sites are contoured and generally grassed and treed.

Needless to say, proposals for new sanitary landfill sites still arouse public controversy.

3.11 Summary -- A GTA Greenlands System

In summary, it is proposed that a GTA regional greenlands system be established to include:

- Areas of Natural and Scientific Interest (ANSIs)
    - provincially significant earth-science ANSIs and provincially and regionally significant life-science ANSIs;
- wetlands
    - all provincially, regionally, and locally significant wetlands;
- Environmentally Significant/Sensitive Areas (ESAs);
- fisheries/streams
    - those cold water, warm water, and migratory streams of significance;
- significant cultural and archaeological areas;
- valleys
    - all valley systems in the GTA;

In addition, it is proposed that a regional trail system be established to include:

- the Bruce Trail;
- an Oak Ridges Moraine Trail;
- connections to the Ganaraska Trail;
- trails within or adjacent to 16 major river valleys within the GTA.

Further, it is proposed that the regional trail system be as continuous as possible, and consideration should be given to lateral connectors to link up the major river valleys via utility corridors, road rights-of-way, etc., as well as linking up local municipal parks systems with the GTA regional greenlands and trail systems.

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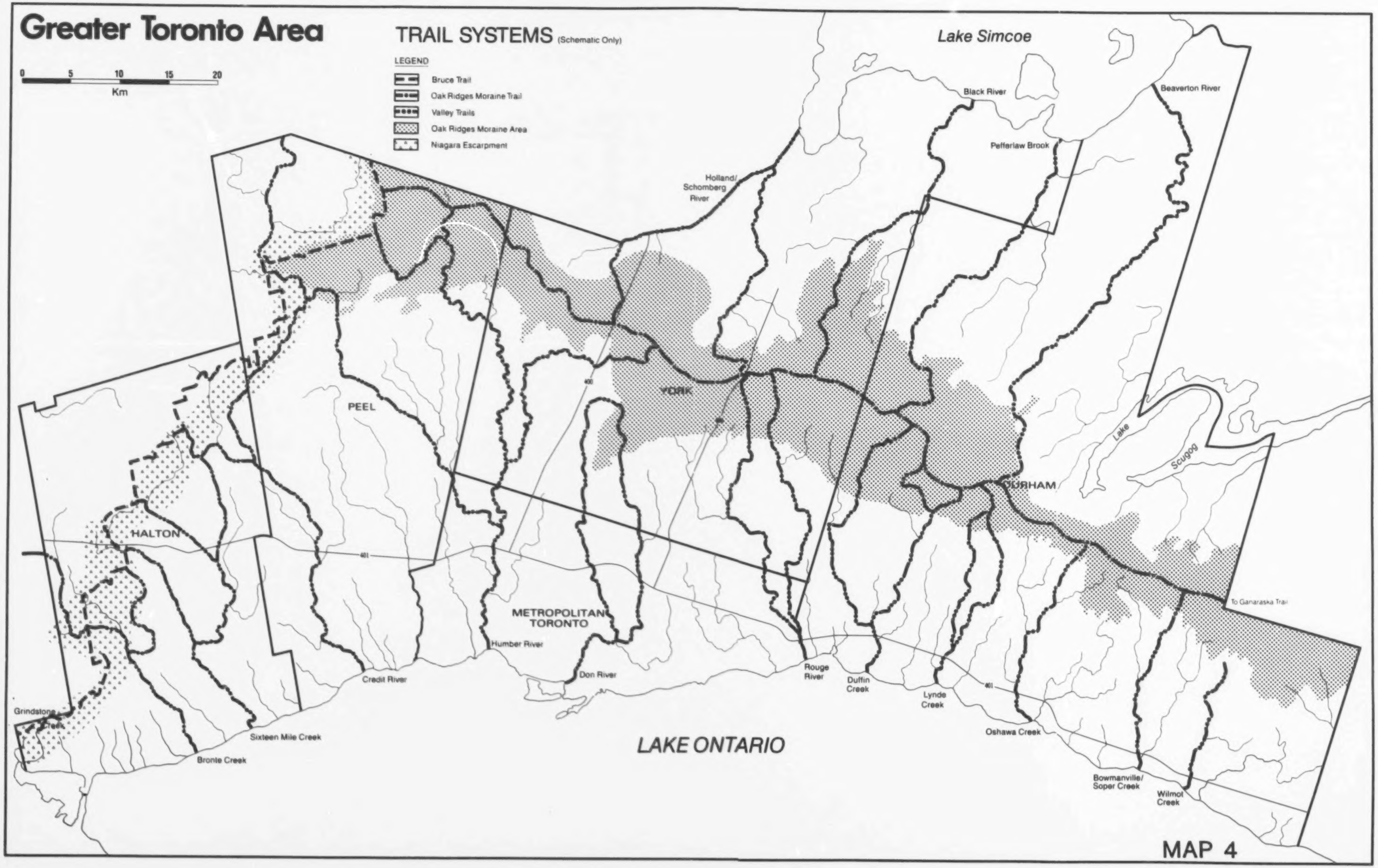
Greater Toronto Area
TRAIL SYSTEMS (Schematic Only)
LEGEND
Bruce Trail
Oak Ridges Moraine Trail
Valley Trails
Oak Ridges Moraine Area
Niagara Escarpment
0
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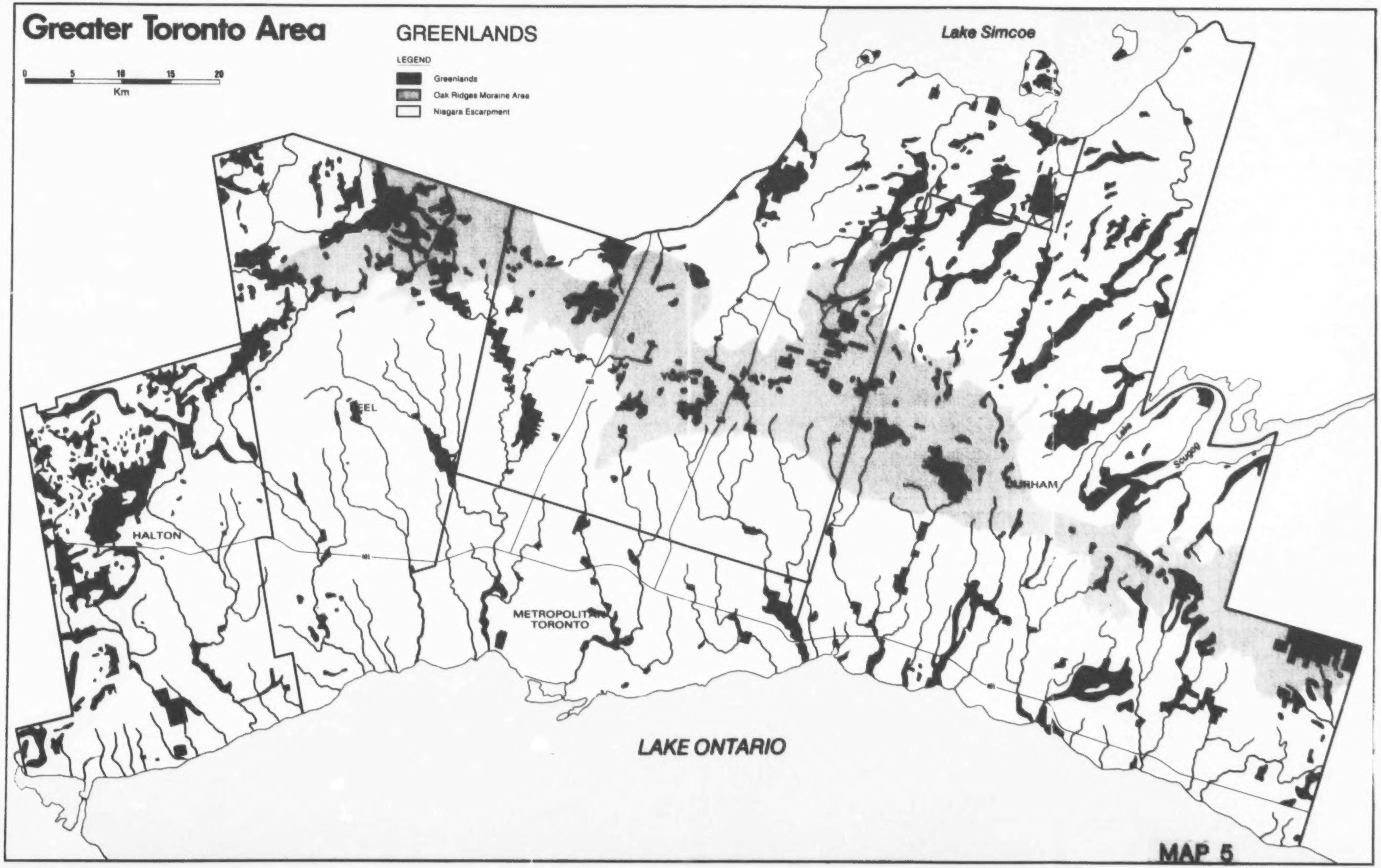
Km
Lake Simcoe
Black River
Beaverton River
Pefferlaw Brook
Holland/
Schomberg
River
PEEL
YORK
DURHAM
Lake Scugog
HALTON
400
401
METROPOLITAN
TORONTO
Humber River
Credit River
Don River
Rouge River
Duffin Creek
Lynde Creek
Oshawa Creek
Bowmanville/
Soper Creek
Wilmot Creek
To Ganaraska Trail
Grindstone Creek
Sixteen Mile Creek
Bronte Creek
LAKE ONTARIO

MAP 4


Greater Toronto Area
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PEEL
HALTON
METROPOLITAN TORONTO
DURHAM
Lake Scugog
401
LAKE ONTARIO

MAP 5

4. MANAGING GREENLANDS/ECOSYSTEM APPROACH

Just as beauty is in the eye of the beholder, the management of greenlands means different things to different people.

Terms such as protection, preservation, conservation, rehabilitation and enhancement are often used to describe the treatment of greenlands -- but what do they mean?

The term conservation is one that often has different meaning for different people. Some use the term interchangeably with preservation while others use it to describe the planned management or care of a natural resource to prevent exploitation, destruction or neglect.

We often hear that a certain greenland should be preserved. But what is actually being requested? Is it to take a snapshot and preserve the greenland as it exists at this point in time? If so, then active management of the greenland, such as opening up the canopy of a forested area, the removal of competing species or carrying out controlled burns to renew prairie-type communities may be required. If the term preserve is used in the sense of just leaving the greenland alone, then it must be noted that the natural environment changes over time. As such, the greenland of tomorrow may be different from the greenland of today.

There is also scepticism on the part of some when the term rehabilitation or enhancement is used in discussing proposed improvements to greenlands. Some are of the opinion that the rehabilitating or enhancing should be left to nature while society concentrates on minimizing the problems. Others see rehabilitation or enhancement as an attempt to manicure natural areas, while still others believe enhancement can be beneficial if only indigenous species are planted, and the works truly designed to assist nature -- e.g., planting trees along watercourses to reduce water temperature for fish, planting appropriate vegetation to provide food and cover for wildlife, etc.

Greenlands provide a variety of functions and serve an array of uses. As such, it is not the intent of this report, nor can it be, to propose one approach or recommend one form of management for greenlands.

The first question to be asked is: "What purpose is the greenland to serve?" And then, in achieving that purpose, what action, if any, is required now and over time?

Ecosystem Approach

It is sometimes said that the flow of water does not recognize man made boundaries or that wildlife movement is governed by habitat limits not municipal limits or even that the continued urbanization and the movement of people within the GTA constantly cross municipal boundaries. All are part of something bigger and the same is true for greenlands.

An ecosystem is the system formed by the interaction of all living things with one another and with their habitat. It is understanding and managing the processes, relationships and interactions of air, water, soil, plants, animals and man within an area.

Recognizing that humans and their habitat (i.e. the built environment) are an integral part of the ecosystem is key. Generally, people view themselves as separate from the ecosystem. Unfortunately this view, and the lack of consideration of the impact of human activities on natural communities, has resulted in harm to local ecosystems.

The need exists in our planning and development to integrate the human and natural communities; to think of an ecosystem as a mosaic of habitats.

There is also a need then to recognize the interactions within the natural community itself. For example, a particular section of valley may be significant because it contains rare or unusual vegetation. However, the entire valley system may be significant for the role it performs for the movement of wildlife. Also, a wetland may be considered "high quality" and thus important but the same wetland may be vital as a staging or nesting area for migratory water fowl.

Greenlands should be managed within an ecosystem context. They should not be solely viewed within ownership or site specific boundaries. To the extent possible, individual greenlands should be linked together through the establishment of green corridors. That is not to say that individual, isolated greenlands should not be secured and managed accordingly. But where the opportunity exists to manage greenlands in a larger context, it should be taken.

5. OPTIONS FOR SECURING GREENLANDS

There are a variety of techniques, ranging from controls over development to acquisition, to help ensure that greenlands are retained.

The term "securing greenlands" is used in this report because all greenlands do not have to be acquired by a public body, nor can it be expected that they will be. For example, if a greenland is significant because of a natural function that it performs -- e.g., as an infiltration area -- then as long as that function is allowed to continue, the land does not necessarily have to be acquired.

Because of the wide variation in the type of greenlands within the GTA and the local circumstances within which they are found, as broad a range of options as is possible should be explored to secure greenlands.

5.1 Land-Use Planning

Land-use planning in Ontario occurs at three levels - lower tier (local municipal level), upper tier (regional municipal level), and at the provincial level.

5.1.1 Local Municipal

Within the scope of the Planning Act, local municipal land use planning is generally considered to be a non-discretionary process. For example, a zoning by-law outlines the uses that are permitted in a particular area. By default, no other uses are permitted, unless the by-law is formally amended through an established procedure.

The advantage of a non-discretionary process is that it provides a clear indication of what is permitted; there are no "maybes", so decisions can be made and actions taken based on what is stated to be acceptable.

Such a process places great onus on making the right decisions based on the right information early on in the planning process. Changes proposed, once into this process, can involve long periods of time or culminate before a hearing in front of the Ontario Municipal Board.

Planning Tools

The key to effective local planning is the thinking that goes into official plans and zoning by-laws in which the principle of development is decided.

There are a variety of tools under the Planning Act -- official plans, zoning by-laws, plan of subdivision/severance approvals, site plan control by-laws, interim control by-laws, holding by-laws, increased density by-laws, etc. -- that could be applied to the securing of greenlands.

The strength and weakness of the system are one and the same -- they rely on individual municipal interpretation and application.

The strength of an Official Plan to realize its goals primarily lies in the Planning Act requirement that all zoning by-laws, site plan control by-laws, and subdivisions must be in conformity with the Official Plan. In some municipalities, however, the reverse occurs in that the Official Plan is continually amended to accommodate particular proposals, rather than vice-versa.

Similarly, some local municipalities are very innovative in their use of other planning tools such as subdivision or site plan control to provide buffers for greenlands, to protect vistas from a valley to the adjoining tablelands or to align the development in such a way as to minimize disturbance or maximize green space; or in the use of holding by-laws or interim control by-laws requiring environmental studies before development can proceed; or in the use of specified setbacks from natural areas within which encroachment cannot occur. On the other hand, some municipalities have chosen to follow more traditional interpretations as to the use of various planning tools.

To raise the level of effectiveness of official plans as tools which can be employed to secure greenlands in a more consistent manner, guidance and direction could be provided from the Province.

With provincial direction, official plans, through prerequisite background studies, could better focus on greenlands within their geographic boundaries and articulate the measures and procedures by which to achieve their objectives for the greenlands.

Also of assistance would be the preparation of a guideline document outlining specific examples of how various planning tools could be applied specifically to greenlands. This guideline document could then be made available to municipalities within the GTA.

Park Dedication

Under the Planning Act, when residential development is being proposed, the municipality may require dedication of 5% of the land for park or other recreational purposes. In the case of commercial and industrial development, 2% of the land may be required. Alternatively in both cases, cash in lieu of land may be requested. An alternative requirement is to permit dedication for residential development at a maximum rate of one hectare (2.5 acres) per 300 residential units or cash in lieu of land.

Where valley lands are involved, some municipalities also receive valley lands as well as the lands dedicated for park purposes.

Some feel that the turning over of these lands to public interests is not unreasonable in that developers charge a sizeable premium for lots immediately adjacent to such natural areas. Newspaper real estate sections advertise new subdivisions which have, as their primary selling point, a location backing onto a major park or conservation area.

Valleys have had a long history of not being developed due to their inherent hazards (e.g., flooding), physical difficulties, and regulation by local conservation authorities. However, as land values continue to rise, creating more developable land or overcoming natural hazards through modification are being proposed more often.

Again, through provincial direction, the principle that valley lands should not be developed, with the option that they be turned over to a government body, above and beyond the park dedication, could be enunciated.

While such a scenario would greatly aid in securing valley lands, it does not address greenlands found outside valley systems.

Alternatively, one or two per cent of the land, above the traditional park dedication, could be requested for greenlands. Cash in lieu of land would only be considered when defined greenlands did not exist on the property.

Cash received in lieu of land would be specifically earmarked for the acquisition of other greenlands within the municipality and would not be used for more traditional park purposes.

This option is broader in scope than the previous one in that it would be universally applied to all development in the GTA. In other words, even "developable tableland" would be subject to a one to two per cent dedication of land for greenlands.

As well, the situation could arise where the one to two per cent does not cover all the desired greenlands on the site. In such a situation, purchase of the remaining greenlands might be necessary. Alternatively, in exchange for the securement of greenlands, a municipality could enter into discussions with a developer either on an increased-density bonus for the remaining lands or allowing the non-developable portion of the property (e.g., the greenlands) to be included in determining density coverage.

Site Preparation

Under the Planning Act, site preparation including the removal of existing vegetation, and stockpiling of top soil and grading, is not dealt with, largely because these activities do not fall within the definition of "development". While site plan control, which is generally not applied to single-family residential development, does include provisions to review grading, it is the final grading upon completion of the development that is addressed.

Consequently, sites can be prepared for development long before all the necessary planning approvals are obtained. In addition to disturbing or eliminating natural features, sites may be left exposed and subject to runoff and erosion. The resulting sediment may clog sewers or end up in the local watercourse, affecting fish and their habitat and building up, causing expensive dredging and disposal.

> **To address this issue, the Planning Act could be amended so that site preparation could not proceed until approval of the draft plan of subdivision was received or the site plan under a site plan control by-law was approved.**
>
> **In both situations, an erosion and sediment control plan would also have to be approved prior to site preparation.**

5.1.2 Regional Municipal

In a planning sense, regional municipalities were established to guide the overall development of regions. In this regard, they were to ultimately assume certain approval powers governing local municipal planning such as plans of subdivision approval and approval of local municipal official plan amendments.

Planning Tools

Like local municipalities, overall development of a region is to be guided by an official plan. However, at this point in time, two of the five Regions within the GTA do not have approved official plans in place.

Although the protection of greenlands is an objective common to many official plans, there is an apparent lack of consistency in terms of defining greenlands and the manner in which the subject is addressed in each plan. As a result, the Region of Halton Plan, for instance, provides a level of detail greater than that found in the Region of York Draft Plan or that of the Region of Peel.

Vague policies in regional plans can foster inconsistent interpretation and implementation strategies at the local planning level. The result may be that, although local plans are deemed to be in conformity with their regional counterparts, the response to a similar set of circumstances in two municipalities within a region may often be different. Moreover, without clear direction, the regional objectives of a plan may become subordinate to matters of local priority.

The problem can be more acute when reliance is placed on official plans for the preservation of inter-regional natural features such as the Oak Ridges Moraine or the Lake Ontario waterfront. In such cases, regional or even municipal priorities may override inter-regional objectives and a valuable natural feature may be lost as a result.

> **Like local municipal land-use planning, regional planning within the GTA would benefit from clearer provincial direction with regard to greenlands.**

Establishment of Development/Greenlands Envelopes

Many have expressed the opinion that truer, higher-order land-use planning is required and that planning through "official plan amendment" is not satisfactory. The region, as the higher-order municipality, would then truly look at the future development of the area, where it should go, and related implications.

> **To implement such a scenario, a regional Official Plan would establish development, greenlands and rural envelopes. Development envelopes could be broken down into urban and near-urban. The Official Plan would clearly delineate the limits of each envelope. It would generally describe the types of land use permitted in each envelope but need not actually designate specific land use. This would remain the responsibility of a lower-tier municipal Official Plan.**
>
> **In proposing such envelopes, a region would undertake the necessary background and support studies. The cumulative effect of each envelope would be assessed. The envelopes would be subject to public review and, once approved, would form the essence of the regional Official Plan.**
>
> **The local official plans would then be responsible for actual land-use designation within the overall context permitted for each envelope.**
>
> **The key is that, once established, the limits of the envelopes could not be modified for at least a five-year period and then could only be modified as part of a regional municipality's overall review of its Official Plan.**

There are several advantages to such a scenario, and they are not necessarily limited to greenlands.

Such a scenario would provide a definite niche for regional municipal official plans.

It would provide the opportunity to more fully assess the overall implications of development on not only greenlands but transportation, water and sewer services, solid waste management, etc.

The establishment of well-defined envelopes would clearly indicate to all concerned where development could and could not occur in the foreseeable future. This could help to reduce the speculative feeling often experienced in urban fringe areas where inaction due to anticipation of development could be replaced with an investment in good land stewardship and conservation practices.

It would also provide the opportunity to review how much rural land, agricultural land in particular, is being converted to urban uses.

Regional Municipal Open Space Plans

This exercise and the Royal Commission on the Future of the Toronto Waterfront will provide the framework for an overall GTA Greenlands Strategy.

The question, administratively, is how to transform the strategy into implementation.

> **One means is to have each regional municipality prepare a "greenlands action plan". The plan would fine-tune the respective components of this work and that of the Commission. The regional action plan would also incorporate information from local conservation authorities and municipalities. Further, the plan would concentrate on linking local park systems to regional greenlands systems through the most appropriate series of pathways and connectors.**

In addition to the involvement of regional and local municipalities and that of conservation authorities, public participation could be provided for through the establishment of regional Environmental and Ecological Advisory Committees (EEACs), as presently exist in some regional municipalities such as Halton, Waterloo, and Niagara.

After completion of the overall action plan, a three to five-year implementation program would be prepared, identifying which public body or group was responsible for which aspects of the plan.

As well under this scenario, local municipalities would be expected to adjust their plans and implementation programs accordingly.

It is recognized that only one upper tier municipality within the GTA, Metropolitan Toronto, has a regional parks department. However, regional municipalities need not have parks departments to effect this scenario. Other agencies such as conservation authorities and local municipalities could actually be responsible for implementation.

What is more important is the need for increased co-ordination and a workable approach to converting the inter-regional work of this study's and the Royal Commission's exercises into implementable packages.

5.1.3 Provincial

Within the provincial domain, there are a number of different tools that could be applied to greenlands, including:

- provincial or ministerial guidelines;
- provincially sponsored study;

- a general expression of provincial interest under section (2) of the Planning Act;
- a provincial policy statement under section (3) of the Planning Act;
- the enactment of new legislation or the amendment of existing legislation;
- a Minister's Interim Control Order or Zoning Order; and
- the preparation of a provincial plan under the Ontario Planning and Development Act and the appointment of a governing body to implement the plan.

These various tools have been arranged in order of increasing degree of provincial involvement required.

Each provincial tool can be discussed singly or in various combinations. The following scenarios are seen as possible alternatives for the provincial treatment of greenlands within the GTA.

The question is what degree of provincial involvement is required or deemed the most appropriate to achieve the desired end.

Study/Guidelines

The Province would sponsor one co-ordinating study and would prepare the appropriate guidelines geared to increasing the "sensitivity" of development to greenlands.

The Province has already taken the first step in this regard through this study and that of the Royal Commission. Both exercises are geared to greater co-ordination for a regional greenlands system within the GTA.

The major advantage of such studies is that once one regional greenlands system is agreed upon, all parties would have the same starting point, regardless of their different perspectives.

From time to time the Province prepares guidelines to assist all levels of government in a particular activity. They do not have the force of law but help to indicate provincial direction.

One such guideline being prepared is that for urban drainage. The thrust is to have storm drainage appropriately recognized through the land-use planning process and to provide guidance for appropriate practices and controls for erosion and sediment during actual construction.

Sites with no controls or inappropriate ones can readily have sediment clog catch basins or enter nearby streams, potentially killing fish, destroying habitat or causing flood control problems.

Greenlands could be aided by the development of other provincial guidelines: one dealing with water conservation and one with the use of existing land-use planning tools to better assist in the securement or protection of greenlands.

While there are several different facets to water conservation, of particular importance to greenlands is the taking of water from streams or groundwater aquifers. As more development occurs and other problems such as the "greenhouse effect" become apparent, ever-increasing amounts of water are withdrawn.

A drawdown of baseflow can affect stream ecology and a lowering of the water table can cause domestic and agricultural wells to go dry.

As we continue to develop our watercourses from Lake Ontario and start to more actively develop the headwater areas, problems with water quantity will continue to grow, particularly vis à vis groundwater, where the problems cannot be seen, only experienced.

Another appropriate guideline on how better to use the existing land-use planning tools to secure or protect greenlands, would assist by making planners and decision-makers more aware of the relationship between planning and greenlands. It might also help to provide a greater degree of consistency in the treatment of greenlands across municipalities.

This guideline would discuss the various planning tools available and indicate how they could assist in the protection of greenlands. As well, the guideline would note how changes or modifications to a particular land-use arrangement could lead to problems.

While there is a need for a co-ordinated greenlands strategy and accompanying provincial guidelines such as those discussed, in themselves these actions may not be sufficient to secure or protect greenlands.

Provincial Policy Statement For GTA Regional Greenlands

In conjunction with an overall greenlands strategy, the Province would prepare a policy statement pursuant to section (3) of the Planning Act.

A provincial policy statement would include regional greenlands identified through this exercise and that of the Royal Commission. It would have to include a provision such that modifications could occur to the actual greenlands identified, as the significance of certain areas may change over time. Because of the specific nature of any proposed modifications, it would probably be more appropriate to have modifications approved by a Minister, as opposed to Cabinet.

Such a policy statement would be the first geographically based statement in Ontario. To date, all others are province-wide in their application. This could set a precedent whereby various requests for policy statements are made throughout the province to address specific geographically based concerns.

In some situations, it may be valid to argue for a geographically based policy statement. In this particular case, the area in question is the GTA -- the largest, most densely populated, and fastest growing urban centre in the province.

As an alternative to a GTA greenlands policy statement, it might be desirable to include greenlands as one component of an overall future urban structure policy statement for the GTA. This would link greenlands initiatives with the work of the Greater Toronto Co-ordinating Committee on urban structure concepts.

With a greenlands policy statement, clear direction would have to be provided as to what is meant by the term "have regard to". This terminology found in all policy statements is designed to provide a certain degree of local flexibility within the overall provincial context. Supporting implementation guidelines would have to be prepared to help explain this term and to help further explain the intent of the policy statement.

Perhaps the largest drawback with this as the main thrust of provincial action is time constraints.

It takes time to prepare a draft policy statement and supporting implementation guidelines. The draft documents should be made available for public review and comment, usually four to six months are required for this part of the process.

Although the time required from initiation to final approval varies from statement to statement, an average of one to two years is usual.

Some would argue that this is too long a period of time before the Province acts on greenlands in the GTA.

Expression of Provincial Interest

In conjunction with an overall greenlands strategy, the Province would prepare a policy statement for all greenlands within the GTA and would declare a general expression of provincial interest under section (2) of the Planning Act for the Oak Ridges Moraine Area, to be accompanied by a provincially co-ordinated study of the Moraine Area.

Under this scenario, the Province would work as expeditiously as possible towards the enactment of a policy statement for all greenlands in the GTA.

In the interim, the Province would declare a general expression of provincial interest for all of the Oak Ridges Moraine Area. Such action would be similar to that taken by the government in 1989 for the portlands east of Yonge Street in the City of Toronto.

The obvious question is why there should not be a general expression of provincial interest for all greenlands in the GTA.

A general expression of provincial interest would require staff of the Ministry of Municipal Affairs to monitor all proposed official plan amendments, rezonings, and other possible planning documents. The Minister would then have to decide on whether or not to make a statutory declaration of provincial interest in each individual official plan amendment or rezoning proposal. If the Minister so declared, decisions of the Ontario Municipal Board would not be finalized until endorsed by Cabinet.

Such an undertaking at the scale of the GTA could be onerous for both the Minister and staff of Municipal Affairs.

Of the major features within the GTA, the Oak Ridges Moraine Area requires the greatest attention at this time. The Lake Ontario waterfront has the Royal Commission, the Niagara Escarpment has the Escarpment Plan and Commission, the river valleys have the conservation authorities with their Fill, Construction and Alterations to Waterways Regulations, and Lake Simcoe has the multi-agency Lake Simcoe Environmental Management Strategy.

As has been mentioned, the Oak Ridges Moraine Area is a significant feature in southern Ontario. It is also a sensitive feature in that it is a major recharge area and the north and south slopes contain the headwaters of many of the watercourses within the GTA. As well, the soils of the Moraine Area are sensitive in their susceptibility to wind erosion if left unvegetated.

Municipalities across the Moraine Area are inconsistent in their treatment of the area's sensitivity.

What is required is a comprehensive planning study of the type of development that should or should not occur within the Moraine Area. Also, there is a need to develop one standard package or range of background studies that should be undertaken as a precondition of any development proposal. Criteria for the collection of information on groundwater, soil type, sensitivity and infiltration rates, terrain steepness, vegetation, wildlife, etc., should be standardized.

Standardized assessment of development would assist in providing consistency from one municipality to the next and would enable ongoing, long-term monitoring to occur across the Moraine Area. Today, such consistency and monitoring are not possible.

Also, a comprehensive study of the Moraine Area should focus on groundwater. As more development takes place, greater demand is placed on water supply. As well, some of the aquifers are relatively shallow and thus easily susceptible to contamination. Further, many of the soils of the Moraine Area are of a type that allow for rapid infiltration. Closer attention may have to be paid to point sources of pollution, particularly septic systems, and a determination as to whether or not "standard" systems are acceptable for the Oak Ridges Moraine Area.

Such a study could be co-ordinated by the Province but should involve the appropriate regional and local municipalities and conservation authorities. All levels of government should be interested in participating if they are truly interested in the future of the Oak Ridges Moraine Area.

In considering a comprehensive planning study, thought must be given to whether the study should be oriented to that portion of the Oak Ridges Moraine Area within the GTA or whether it should include all of the Moraine from the Niagara Escarpment to the Trent River. It may be that time, urgency, and development pressures dictate that the initial area of concentration should be that part contained within the GTA.

The major advantage of this scenario is that it allows the Province to take some action immediately through the general expression of provincial interest, while following it up with a comprehensive study of a major physiographic feature that has limited controls over it. In a parallel direction, the Province could work towards a GTA greenlands policy statement.

Minister's Interim Control/Zoning Order

In conjunction with an overall greenlands strategy and a GTA greenlands policy statement, the Province, through the Minister of Municipal Affairs, would bring into force a Minister's Interim Control or Zoning Order for the Oak Ridges Moraine Area.

Under the Planning Act, the Minister can directly invoke certain powers normally exercised by municipalities. Traditionally, the Minister has applied orders to certain areas in northern Ontario which are unorganized. Seldom has a Minister applied an order where a municipality is functioning.

Basically, an interim control order would freeze or limit development to provide time for a land-use study to be undertaken. The control order would be in effect for one year with an option to renew it for an additional year. After the maximum two years, another control order (and presumably a municipal interim control by-law) could not be applied to the same lands for a minimum of three years.

A Minister's Zoning Order, on the other hand, would work much the same way as a municipal zoning by-law. It would outline the uses permitted and by default all other uses would be prohibited. The Minister would have to prepare an individual zoning order for each local municipality in question. Obviously, the more municipalities included, the longer the time required to prepare the orders. As well, without a clearly definable boundary such as a road or a property line, a surveyed boundary may be legally required. This could prove expensive in the case of the Oak Ridges Moraine Area where, for example, the southern boundary is defined as the 244-metre (800-foot) contour.

Unlike an Interim Control Order, a Zoning Order does not have a time limit, which, depending on one's perspective, could be good or bad. If a Minister's Zoning Order was applied to the Oak Ridges Moraine Area, it could be removed for each municipality once it had incorporated the results of the comprehensive planning study into its official plan.

The use of a Minister's Interim Control or Zoning Order would be a fairly dramatic provincial intervention in local municipal land-use planning. Some would argue that such a move is required, but it could be disruptive to planning and development within the local municipality.

If a Minister's Order is contemplated, then the Province must clearly justify the move. The rationale for such a move in relation to the Oak Ridges Moraine Area would have to be that development pressures were so tremendous or that destruction so imminent that a major intervention was called for.

Such a course of action may be difficult to justify for all of the Oak Ridges Moraine Area within the GTA. It may be a more plausible course of action, however, for that stretch of the Moraine Area along the Yonge Street corridor in Richmond Hill, Aurora, and Newmarket. It is in this area that urbanization is the most intensive and there is the most pressure for development.

A Provincial Plan and Corresponding Implementing Body

Based on an overall greenlands strategy, the Province would prepare a more detailed plan under the auspices of the Ontario Planning and Development Act and would designate a public body to implement the plan.

Within the GTA today, there are two examples of such an arrangement -- the Niagara Escarpment Plan and the Parkway Belt West Plan. The Niagara Escarpment Plan is implemented by a provincially appointed Commission, while the Parkway Belt West Plan is administered directly by the Ministry of Municipal Affairs.

In both instances, the provincial plan supersedes all other planning, including local municipal land-use planning. As these plans are prepared by the Province, it is also within the provincial domain to approve any subsequent modifications to them.

This is clearly a very "hands on" approach by the Province in local land-use planning.

While such an approach could be discussed for all greenlands within the GTA, it would be more realistic to discuss it in the context of the Oak Ridges Moraine Area.

An Oak Ridges provincial plan could be implemented by a newly created commission, or, as has been suggested by some, the responsibilities of the Niagara Escarpment Commission could be expanded to include the Oak Ridges Moraine Area.

The major advantage to this approach is that one public body would administer one plan for all of the Oak Ridges Moraine Area. This would certainly provide a level of consistency not presently found from municipality to municipality across the Moraine Area.

On the other hand, this same advantage could also be considered a disadvantage in that another government body would be set up in an area already covered by three levels of government and several special-purpose bodies. It could be argued that another layer of government would slow down the development process even further. This is particularly problematic at a time when the provincial government is examining ways to streamline the process under the Planning Act.

The biggest disadvantage with this approach is the amount of time it requires.

It took more than 10 years to make both the Niagara Escarpment Plan and the Parkway Belt West Plan fully operational. The Escarpment Plan was embroiled in a substantial debate as to what scientifically constituted the Niagara Escarpment. A similar debate regarding the Oak Ridges Moraine would be possible. In addition, it was necessary to establish the boundaries through surveyed lines for the Parkway Belt West Plan. This was an expensive undertaking and one which night be necessary for the Oak Ridges Moraine Area.

Legislation

To give effect to an overall greenlands strategy, the Province could enact new land preservation legislation.

Such legislation would have the effect of preserving certain greenlands so that they could not be developed or activities could not occur that might threaten the greenland.

The first decision that would have to be made is whether or not such legislation would be specifically applied to the GTA or to the province as a whole. It is anticipated that there would be substantial pressure for province-wide application, which would then require time to survey and study the lands to be included.

A determination would also have to be made regarding the types of greenlands to be included in land preservation legislation. Would it be limited to more natural type greenlands, or would open space areas of a more recreational nature (e.g., trail systems) also be included? To what extent would rural farmlands be considered, particularly related to their conversion to urban development?

If the overall thrust of land preservation legislation was to keep development out of certain areas, then the legal matter of essentially "freezing" certain privately owned lands from future development would have to be addressed.

Such an approach would certainly assist in solidifying the government's commitment to the retention of greenlands. Its major drawback, however, is also one of time constraints.

If the desire is to take some form of immediate action to protect greenlands in the GTA, then the legislative route is not a viable one. It could be, however, over the long term, that land preservation legislation for Ontario deserves further consideration.

5.2 Development Permit System

A development permit system is a discretionary system which examines specifically what is being proposed and the area within which it is proposed. Therefore, it is a system where development may or may not be allowed to take place.

This system is in contrast to the municipal land-use planning process, which is considered to be non-discretionary. Municipal zoning by-laws clearly indicate what uses are permitted; by default, all other uses are prohibited.

Within the GTA, there are several examples of development permit systems. Some, such as that under the Niagara Escarpment Plan, are geared to the sensitivity of natural features and the impact of development on them. Others, such as the valley regulations of conservation authorities, are technical in nature, geared more to addressing the problems of flooding and erosion.

Development permit systems are not geared necessarily to just building and structures. Some also deal with the dumping of fill, the removal of vegetation or the taking of water.

5.2.1 Valleys/Watercourses

One of the primary development permit systems in place for valleys and watercourses are the Fill, Construction and Alterations to Waterways Regulations of the conservation authorities.

Through these regulations, conservation authorities control modifications to watercourses, the construction of buildings or structures in flood plains, and the placing or dumping of fill in valleys and other areas so defined within their respective jurisdictions.

As indicated, these are technical, hazard-related regulations -- basically designed to allow valleys to safely perform their natural function of passing flood flows.

There are two possible scenarios that could see such regulations strengthened -- greater hazard-related control and greater conservation-related control.

Greater Hazard Related Control

Generally, to date, developers have not attempted to develop within valleys largely due to the technical problems that must be overcome. This situation is particularly true for the steep, well-defined lower valleys. However, as development continues to progress northward from Lake Ontario, the valleys become less defined with more gentle slopes. As a result, conservation authorities are experiencing an increasing number of applications to modify valley walls to provide for terracing to permit structures or to provide more developable tableland through filling.

Presently, the Conservation Authorities Act does not permit conservation authorities to control the construction of buildings or structures outside of that portion of a valley defined as floodplain. As a result, they legally cannot control structures being built up the sides of valleys. Also, they can only control the placing or dumping of fill and not the removal of fill. Therefore, if the material is removed from the site, valleys can be modified and wetlands dug out and conservation authorities legally cannot control it.

> **Therefore, section (28) of the Conservation Authorities Act could be amended to permit conservation authorities to pass regulations to control the construction of buildings and structures not only in floodplains but in valleys in general. The Act also could be amended so that conservation authorities could control the removal of fill, as well as the placing or dumping of fill.**

Greater Conservation-Related Control

Many people confuse the administrative powers of a conservation authority (section (21)), which enables them to undertake watershed studies, identify environmentally significant areas, create conservation areas, etc., with their regulatory power under section (28).

The regulatory power is very specific, relating to hazards. Therefore, a conservation authority cannot turn down a development proposal because it would destroy a natural area.

The term "conservation of land" is found in section (28) of the Act with regard to controlling the placing or dumping of fill. However, the Mining and Lands Commissioner, the appeal body for applications, has interpreted the term to apply only to erosion -- i.e., the placing or dumping of fill that could cause instability or erosion and thus could affect the conservation of land in a physical sense.

As development pressures continue and the cost of land remains high, conservation authorities are increasingly beset with applications to modify valleys so that more development can occur. Within the GTA, it is now economical for developers to spend funds on required background studies and construction so that development is "technically safe".

If a development permit system by a conservation authority is seen as a viable means to protect greenlands in valleys, changes to the Conservation Authorities Act would be required.

> **The term "conservation of land" presently found in the Conservation Authorities Act would be expanded to apply to the protection of natural or open space areas as well. Once modified, the term "conservation of land" could apply to any construction of buildings or structures, any placing or dumping or removal of fill, and any modifications to watercourses.**

Such an approach would substantially alter the existing intent of a conservation authority's regulation. It would, however, provide the tools necessary to protect valley greenlands. Today, such areas generally fall between the cracks, as municipalities tend to leave the valleys to the conservation authorities to control, yet the conservation authorities' regulations are oriented to hazard protection and not greenlands protection. As well, controlling fill or modifications to watercourses are powers that municipalities do not have.

Any changes to the Conservation Authorities Act for either of the aforementioned scenarios would, in all likelihood, be equally applicable to any conservation authority in Ontario.

With any expansion of regulatory powers, it is suggested that the Ministry of Natural Resources ensure that a conservation authority has the ability to administer the new powers. As well, the preparation of plans for individual watersheds such as that prepared by the Metropolitan Toronto and Region Conservation Authority for the Rouge River or the preparation of guidelines to generally explain the application of regulations would be of assistance.

The Ministry of Natural Resources also applies the Lakes and Rivers Improvement Act to waterways. A permit is required for modifying a watercourse in any way.

Today, one of the key focuses of this legislation is the protection of fisheries and fish habitat. The Ministry uses this Act in conjunction with its delegated powers under the federal Fisheries Act. Since it is the enforcement aspect of the Fisheries Act that has been delegated to it, the Ministry can only react after damage has occurred. The use of the Lakes and Rivers Improvement Act is more geared to an approval system prior to development occurring.

The Lakes and Rivers Improvement Act can also be used to control the dumping of fill in watercourses and modifications to watercourses that may affect upstream flooding or downstream erosion. In this regard, the use of the Lakes and Rivers Improvement Act would appear to duplicate some of the powers under a conservation authority's Fill, Construction and

Alteration to Waterways Regulation (or vice-versa). It must be noted, however, that these are important water management tools where conservation authorities do not exist.

The Province may wish to examine the apparent duplication of regulatory responsibilities under the Conservation Authorities Act and the Lakes and Rivers Improvement Act regarding valley systems and watercourses.

The advantage of such an approach is that the removal of any duplication would assist in streamlining the planning and development process. As well, a clear indication of which public body was responsible for what would also help to minimize confusion and the time required to process an application.

5.2.2 Water Taking/Water Quality

Under section (20) of the Ontario Water Resources Act, a permit is required from the Ministry of the Environment for the taking of more than 50,000 litres (11,000 gallons) of water a day. This legislation is equally applicable to surface water from watercourses and lakes and to groundwater.

Apart from domestic use, major uses include: irrigation for golf courses and nurseries; industrial use in the processing of materials; and the dewatering of some quarries, which in essence is a taking of groundwater.

Decisions are made on a case-by-case basis as to whether or not a permit should be granted. Applications must often be accompanied by studies addressing any implications for the area or for those already taking water.

The concern here is the cumulative effect of a case-by-case analysis. This concern may become clearer as more development generates more demand for water. This should be of particular concern in the Oak Ridges Moraine Area where groundwater serves domestic and livestock purposes and also feeds many of the headwater streams in the area.

The present system appears to operate on a first-come, first-served basis, as opposed to one that attempts to define a water budget (e.g. a water quantity inventory) for a watercourse or an area and then determines that portion that may be used for water taking and how best to distribute that amount of water.

It is difficult and possibly expensive to get a determination of groundwater resources in an area such as the Oak Ridges Moraine. But without some cumulative or area-wide analysis, problems with groundwater may very well only be realized after they have occurred.

Also, there appears to be no incentive for takers to apply water conservation practices. There is no encouragement to use more efficient equipment and no penalties for waste.

> **Therefore, the Province could undertake the necessary studies to prepare a water budget for the appropriate watercourses within the GTA and issue water-taking permits based on that analysis and in light of present and potential users. A more complete analysis of groundwater resources in the Oak Ridges Moraine Area with a similar view to establishing a water budget could also be undertaken.**
>
> **As well, the Province could direct water takers to adopt conservation-oriented practices and encourage the use of water-efficient equipment.**

Legislation relating to private sewage systems falls under Part VII of the Environmental Protection Act. Actual standards for sewage treatment are contained within Ontario Regulation 374/81. In many instances, the power to approve individual septic systems is delegated to the local Health Unit.

Testing the suitability of a site for a septic system includes, among other things, an infiltration rate test in which, basically, through the use of a soil sample, travel time is estimated. The material should travel away from the leaching beds in a reasonable time frame so as to not cause the septic system to back up.

Very permeable soils, such as those found throughout the Oak Ridges Moraine Area, can be considered very good or very bad areas for septic systems, depending on one's perspective.

Rapidly draining soils remove material from the septic system relatively quickly, thus minimizing any potential back-up problems. On the other hand, such rapidly draining soils allow the material to travel farther and faster in a more concentrated state. In areas with a high water table or a perched aquifer or with a well too close by, water-quality problems can result.

> **The alternative here is for the Province to undertake a study of more efficient septic system designs and materials for use in areas with rapidly draining soils. It could also include an analysis of communal systems for two, three or more residential dwellings. As this alternative would involve new designs, test cases could first be studied.**

5.3 Acquisition

The majority of the regional greenlands identified in this report are privately owned. Most of the publicly owned lands are in river valleys, provincial parks, conservation areas, and regional forests.

To propose public acquisition as the sole mechanism to secure greenlands would be financially prohibitive. Nonetheless, situations will arise where acquisition may be the only recourse.

To attempt to determine the value of a regional greenlands system would be difficult without extensive study. The value of a parcel of land is dependent upon a number of factors, including location and developability. Land costs in the GTA range from $3,600 -- $14,800 a hectare ($2,000 -- $6,000 an acre) for undeveloped valley land, and $12,500 -- $15,000 ($5,000 -- $6,000 an acre) for rural tablelands with sensitive natural features, up to $250,000 a hectare ($100,000 an acre) for urban fringe lands and anywhere from $740,000 to more than $5,000,000 a hectare ($300,000 to $2,000,000 an acre) for developable urban lands. Also, the cost to acquire public or conservation easements on lands in the GTA varies substantially.

Therefore, it is difficult to specify any particular allocation for the acquisition of greenlands. As well, a specific allocation should be assessed in light of other mechanisms and initiatives implemented to assist in securing greenlands.

Within the last five years, two special acquisition programs were established for specific areas in the GTA; a 10-year $25-million acquisition program for Niagara Escarpment lands and a $43-million Metropolitan Toronto and Region Conservation Authority program to acquire 13 areas in Metropolitan Toronto.

Based on the assumption that land acquisition would be only one of several different mechanisms selected to help secure regional greenlands, and in light of the high cost of GTA lands and the fact that some of the lands would be specifically required for extensive public use (e.g., trail systems), the option exists to establish a regional

greenlands acquisition program with a five-year, $100-million plan.

Because the Province cannot be expected, nor should it necessarily be expected, to entirely fund such a program, it could be set up on a matching grant basis. The Province would then contribute $10 million annually to a special fund and municipalities, other public bodies, local and special interest groups, etc., would be required to contribute the remainder.

After the five years, the merits of continuing the program would be reviewed.

So as to ensure that reliance on acquisition to secure greenlands does not steadily increase over time, any acquisition should be considered only when a site is threatened and other means (e.g., planning controls) to secure it have failed or when a parcel of land would provide for public access, and other means to secure it are not viable.

It must be noted that acquisition is only the start of the process. Once acquired, land is usually turned over to a public agency that provides ongoing maintenance and upkeep. Many local and special interest groups who raise the funds and acquire land must do this because they cannot afford the ongoing maintenance cost. In a similar vein, many public bodies are increasingly required to set aside large portions of their overall budgets for maintenance.

Like acquisition costs, maintenance costs for land can vary widely. Even the cost of basic maintenance for open space, passive areas, and trails can vary from $25 to $37 a hectare to more than $2,500 a hectare ($10 to $15 an acre to more than $1,000 an acre).

If the option to establish a regional greenlands acquisition program is pursued, then consideration should also be given to adequately funding the ongoing maintenance costs of the public body named as steward of the lands acquired.

5.4 Land Stewardship

In addition to the various tools already discussed which can be used to secure greenlands, alternative methods of conservation that actively involve the public and the use of private lands should be explored. The protection of greenlands cannot and should not be the responsibility only of government agencies. Citizens and interest groups must also play a significant role in any greenlands strategy.

The active involvement of these groups in conservation, also known as land stewardship, complement other tools such as land-use planning and direct acquisition. They are particularly effective for lands where public access is not necessary, nor even desirable.

This method has worked effectively in other jurisdictions, notably in the U.S. In Ontario, stewardship efforts have begun through the Natural Heritage Stewardship Program. This conservation program, sponsored by the National Heritage League (a co-operative group of 28 government and non-government groups), has negotiated nearly 600 voluntary stewardship agreements covering 6,500 hectares (16,000 acres) of natural areas.

The notion of the increased use of stewardship programs in the GTA appears to have support among individuals, interest groups, community associations, and municipalities in the area.

There is a range of stewardship options which could be explored for the GTA. In essence, two basic stewardship options are possible. The first is the strengthening and more widespread adoption of a range of stewardship techniques, including agreements and conservation easements, by existing organizations. The second option is that, in addition to the existing agencies adopting a number of these techniques, a GTA Greenlands Foundation and/or Land Trust could be established solely to promote and implement these stewardship options.

5.4.1 Option One: Stewardship Techniques

This scenario can involve the use of agreements, leases, conservation easements, purchase/saleback, creative development, conservation real estate, designation or dedication. None of these techniques are mutually exclusive, and an effective stewardship program relies on the complementary use of many of them.

Agreements with Private Landowners

Agreements with private landowners can take the form of verbal or written agreements or more formal management agreements. Verbal stewardship consists of basic "handshake" agreements between a landowner and a conservation agency whereby a commitment is made to conserve the natural heritage features of a property. In many cases, this is used as the initial conservation approach to private landowners.

Many U.S. states utilize verbal stewardship programs. In Ontario, such a program was developed in 1985 by the Natural Heritage Stewardship Award. The general approach has been to identify significant areas, and then to contact the landowners by letter and phone, followed up with a personal visit.

In return for making the verbal commitment to maintain and protect the natural areas on their property to the best of their abilities, landowners in Ontario receive a plaque with a mounted bronze medallion.

This type of program has met with considerable success in the U.S. As well, the Ontario program, based in the southern part of the province, has received 600 landowner commitments.

Another form land stewardship can take is written agreements. They are not formal legal documents and usually last for a defined period of years. These involve only a promise of protection for the heritage features involved.

There are few examples of this technique actually in place, because in most cases when agencies go to the trouble of obtaining a written, signed agreement, they work toward a more binding easement or more detailed management agreement to meet particular objectives.

Perhaps the best example of a written stewardship agreement is the recently introduced Conservation Lands Tax Rebate Program. Under this program, landowners of certain significant natural areas are eligible for a 100-per-cent property tax rebate on the natural-area portion of their land, provided they sign an affidavit promising to leave the area in a natural state. The rebates apply to owners of Class I, II, and III wetlands, areas of Natural and Scientific Interest, areas designated as Escarpment Natural within the Niagara Escapement Plan, non-revenue producing conservation authority lands, and other conservation lands owned by non-profit organizations that contribute through their management to provincial conservation and natural heritage objectives.

A total of 3,500 individuals and conservation authorities participated in the program during the 1989-1990 year, protecting 40,500 hectares (100,000 acres), primarily in southern Ontario. Approximately $4.5 million was paid out to these landowners last year.

A third type of stewardship is management agreements. A wide variety of these agreements are used in Ontario and elsewhere to achieve conservation objectives. Such agreements normally have a fixed term, and can range from informal agreements with no legal force to binding legal contracts. In most agreements, a public agency provides technical and financial assistance, while the landowner provides the land base for management and agrees to follow specific management practices.

The most common types of management agreements now in use in the GTA relate to forestry, particularly agreements with private landowners under the Woodlands Improvement Act. Together with related forestry agreements for municipal and conservation authority lands, approximately seven per cent of the GTA's forest cover, some 11,000 hectares (27,000 acres), is managed by the Ministry of Natural Resources under these agreements.

The Province is also involved in other management programs for fishery habitats and wildlife areas. In these cases, the Ministry of Natural Resources either undertakes the work directly, or provides the material to landowners to improve their land. Landowners agree to protect the area and to permit Ministry employees access to carry out their work. If the owner's responsibilities are not fulfilled, or if the property is sold and the new owner is unwilling to assume the agreement, the estimated management costs must be repaid.

Conservation authorities and non-government organizations also may enter into management agreements with private individuals. Ducks Unlimited and the Bruce Trail Association are two groups that are currently involved in such programs.

Management agreements have been successfully used in other jurisdictions by both government and non-government agencies. The Countryside Commission in Britain, for example, makes use of management agreements and grants to encourage tree planting and forest management. The Natural Lands Trust, based in Philadelphia, works through agreements with private owners to provide management advice for wildlife or recreational uses, or to develop strategies for the conservation of significant features during land disposal or development.

Conservation plans prepared by the Credit Valley Conservation Authority on individual properties are good examples of stewardship at work. The Authority identifies significant areas within a property and makes a number of recommendations to the landowner on ways to conserve natural features. An inventory of flora and fauna, including illustrations and descriptions, accompanies the bound report. Persons receiving these plans have come back to the Authority to have its recommendations carried out.

Another excellent stewardship-like program is being undertaken by the Region of Waterloo. The Region, with the assistance of its citizen-based Environmental and Ecological Advisory Committee, has identified 69 Environmentally Sensitive Policy areas (ESPAs). Most of these ESPAs remain in private ownership. The Region has prepared comprehensive environmental management plans for several of its ESPAs and its goal is to ultimately have a management plan for each ESPA to protect and enhance its particular qualities and character. As well as outlining assistance available to landowners, the plan includes measures which owners should take. All landowners in the ESPA are sent an information package informing them that part of their land has been proposed for inclusion in a new ESPA and identifying significant natural areas on their properties. They are invited to attend a meeting, followed up by a written summary of questions most commonly asked by landowners, including an overview of the implications of such designation of the future development of the properties.

Each of these kinds of agreements has strengths and weaknesses. For example, while verbal stewardship agreements can be negotiated quickly and are easy to work with, they have no legal status and cannot enforce conservation. They do not allow for the specification of any detailed management objectives, and rely on a great deal of trust and understanding.

Verbal agreements are a good starting ground, however, for the gradual negotiation of stronger protection. They serve a significant educational role, and may build on the good will of conservation-minded individuals.

Written stewardship agreements appear to carry more weight with landowners than verbal agreements and may be more effective in the GTA, given the development pressures in the area. They do represent a serious commitment on the part of an owner, and with the structure of Ontario's Conservation Lands Tax Rebate Program, there is a cumulative financial penalty for breaching the agreement. Any owner wishing to back out of the agreement must repay the rebate received over the previous ten years plus interest. Over time, this could amount to a strong incentive to maintain such agreements.

Written agreements are also fairly simple in nature and are efficient. The financial incentive is a component of the program; however, the amount of public funds involved is not large.

On the negative side, written agreements are less appealing to landowners than verbal agreements. Personal contact is absent and the tax rebate is available at present only for a limited category of natural heritage properties.

Management agreements are more binding, and therefore require a greater commitment to the protection of greenlands. However, they encourage appropriate management practices in a form that is acceptable to a substantial number of landowners.

They are an excellent vehicle to attain greater landowner awareness and involvement in the natural features on their lands and they provide an extensive land base for conservation programs at relatively low cost.

On the negative side, a major drawback to management agreements is their limited duration, and the relatively low penalties for landowners who break the terms of the agreement. Currently they are typically oriented towards resource production rather than the protection of rare species, scenic quality or other objectives.

Agreements are an important component of a stewardship program. A number of options are available to strengthen the current incentives to landowners.

The Conservation Lands Tax Rebate Program, which provides financial incentives to owners of a limited category of conservation land, could be extended to all regionally significant greenlands.

The management agreement program could be strengthened by linking agreements to the property tax rebate. For example, it could be a requirement to have a woodlot under a WIA or

equivalent management agreement before qualifying for the Managed Forest Tax Rebate.

The management agreement program could be restructured to include natural heritage objectives as well as resource production goals.

Leases

Leases are simple, standardized agreements wherein one party pays for the use of a property for a period of time. This technique has not been used extensively. There has been some experimentation in the Prairies to protect potholes for waterfowl habitat. In addition, there have been one or two cases in Ontario where naturalists' clubs have leased nature reserves. Rural, non-farm landowners renting land to farmers can use a stewardship lease to ensure good soil and water conservation practices by renting farmers.

Leases can be expensive and are temporary in nature. However, they are relatively simple and provide a convenient legal mechanism to buy time.

Conservation Easements

Conservation easements can provide permanent, property-specific protection for natural features on private land through legal agreements to restrict the management and use of significant areas on a property. Easements usually apply to only a portion of a property and are often sold or donated to public agencies. While there has been considerable experience and success in the use of conservation easements in the U.S., they have only recently been tried in Ontario. The Ontario Heritage Foundation is the primary agency involved in securing easements, because of enabling legislation under the Ontario Heritage Act.

Easements have become an important land protection tool over the past two decades in the U.S., with more than 700,000 hectares (1.7 million acres) now under easement. About one-quarter of those easements are donated. Many states have adopted a flexible approach to easements, with simplified formulas for calculating the price of an easement.

The limited experience with conservation easements in Ontario has brought mixed results. The Ontario Heritage Foundation has accepted heritage easements on historic buildings in exchange for provincial grants. To date, however, the Foundation holds only five natural heritage easements across the province, and two easements on archaeological properties. Lack of public understanding of easements has been identified as an obstacle to more widespread use, along with the limited ability of other organizations to acquire easements.

There are a number of advantages to using conservation easements as a protection tool. Conservation easements can be less costly than outright purchases; maintenance costs are normally much less than the comparable cost of managing public lands; easements provide great flexibility; and they are perpetual in term and the permanent protection applies to all future owners.

The difficulty with easements is the unfamiliarity and apprehension of private landowners about encumbering their land with a legal, complicated agreement. This landowner reluctance is illustrated by the recent experience of the Bruce Trail Association -- in four years of promoting easements to landowners, they have found only one owner willing to pursue the concept. In addition, the incentives for easements at the current time are limited.

Easements could be a useful tool in the GTA because they could retain productive uses of the landscape, such as agriculture, forested areas or wetlands, while providing the permanence of protection needed to counter the increasing pressures to urbanize over the coming decades.

Currently, the incentives for conservation easements do not encourage their widespread usage. Changes are possible, however, to make this form of stewardship more popular.

A pool of funds could be established to assist landowners in undertaking appropriate management activities in exchange for easements. This approach could parallel that used by the Ontario Heritage Foundation for heritage easements on historic buildings.

Easements could also be linked to the Conservation Lands Tax Rebate Program to provide immediate property tax relief for any owner signing an easement.

Changes could also be made to allow non-government groups and conservation authorities to hold easements.

The Ontario Heritage Foundation could be encouraged to actively pursue natural heritage easements.

Other Stewardship Techniques

Purchase/Saleback

As the name suggests, this technique involves the purchase of properties, the protection of significant portions, and the resale of the land. One form this can take is the purchase of an entire property, the severing of significant sections to be retained as public land, and the resale of the remainder.

This technique can be less expensive than property acquisition, and the management and carrying costs associated with holding land are avoided. The weakness of this approach is the initial expense of purchasing property and the complexity of the transaction for government agencies.

Creative Development

Creative, or limited, development takes the purchase/saleback concept one step further by incorporating a significant amount of carefully designed development into the protection equation. This technique has been used primarily by U.S. land trusts, particulary in the rapidly urbanizing sections of New England. In fact, the Centre for Rural Massachusetts has produced a design manual to assist municipalities and other organizations in initiating non-traditional development projects. In some cases, the trust organizations carry out creative development projects themselves; in others they advise landowners or developers on creative development techniques.

The advantages of creative development techniques are much the same as for purchase/saleback -- significant parts of high-value properties are retained as greenlands at relatively low or no cost to the sponsoring organization or the public purse. There are also a number of drawbacks -- creative development requires substantial initial investment, and it is a highly complex process that requires highly skilled technical staff.

Conservation Real Estate

Conservation real estate involves the practice of encouraging conservation-minded private buyers to purchase greenlands that are up for sale when no other alternative approach appears possible. Often the sale of such land is combined with limited development or easements.

There are a number of examples of this technique in practice, primarily in the U.S. Typically, when a land trust is unable to finance a land purchase, it turns to finding a conservation-minded buyer instead.

Designation/Dedication

Designation refers to the process of designating historic buildings or districts under Ontario's Heritage Act. At present the process does not apply to natural heritage sites, but this extension of the concept is being considered in the present Heritage Policy Review.

Designation does not provide permanent protection, but it provides a strong moral incentive, and some financial incentive for conservation.

Dedication is a process used in many U.S. states whereby a private landowner can "dedicate" his or her land, normally in perpetuity, for conservation purposes.

5.4.2 Option Two: Foundations/Land Trusts

A second option to encourage private stewardship involves the establishment of a foundation and/or one or more trusts in the Greater Toronto Area. In this scenario, landowners and conservationists interested in promoting stewardship and protecting land with open-space, recreational or ecological importance, join together to utilize many of the techniques discussed in the previous section.

Foundations

A greenlands foundation would be a body set up to oversee the implementation of a land stewardship program. While not necessarily involved in actual implementation, a foundation would provide a central focus and expertise for other groups and individuals involved in the more day-to-day aspects of managing the program.

The option exists to establish a new body, a GTA Greenlands Foundation, or expand the focus of the existing Ontario Heritage Foundation to more actively address natural as well as built heritage sites.

If land stewardship becomes a major initiative, it may be more desirable to establish a new foundation specifically for greenlands.

Many of the private land stewardship techniques discussed in this report are relatively new to Ontario. Consequently, a great amount of effort would be required initially to increase their familiarity and use. Given that the Ontario Heritage Foundation is continuing to make inroads regarding built areas, the added workload required to more actively address natural heritage areas may be too much for one organization.

If a new body -- a GTA Greenlands Foundation -- was established, it would work in close co-operation with the Ontario Heritage Foundation.

Trusts

Trusts are found in many jurisdictions; for example, more than 700 land trusts are now active in the U.S., involving hundreds of thousands of citizens in 46 states. Trust organizations are common in Britain and various types of trusts also exist in several Canadian provinces (Prince Edward Island, British Columbia, Saskatchewan, Manitoba). Typically, trusts have charitable, non-government status and are usually supported by memberships and considerable volunteer involvement.

Trusts can vary widely both in structure and in the roles that they perform. Some land trusts are heavily involved in acquisition of land and conservation easements. In many instances, this land is temporarily held by the trust but is ultimately turned over or sold to another agency for its day-to-day management. In some cases the trust itself is involved in limited development and/or management of the land.

Many land trusts provide direct legal, land-use and environmental advice to other groups and individuals in the area. In addition, they can perform a strong advocacy role in the community.

In areas where land values and development pressures are high, the ability of private land trusts to purchase land or to solicit donations of land and easements becomes progressively more constrained. As a result, trusts often become involved in joint government/non-government programs to achieve their goals.

For example, a system of 15 local land trusts on Cape Cod, which is experiencing phenomenal development pressures, works closely with town and state governments on projects. In one case, the Orleans Conservation Trust acquired and held a waterfront property until the local town had sufficient time to raise the necessary funds to take it over.

The "broker" role of land trusts has been more formally recognized in the State of New Hampshire, through the creation in 1987 of the Trust for New Hampshire Lands. The Trust was set up specifically to administer a proposed $50 million state investment in open space, aiming to protect at least 40,000 hectares (100,000 acres) over five years. The operating costs of the Trust are completely funded by more than $3 million in private donations, allowing all of the State funding to go directly to acquisition of land and easements.

Proven advantages of trusts include their ability to act quickly and with flexibility in responding to conservation needs. They tend to have a high degree of landowner and public support, giving them credibility with potential donors and volunteers. Many trusts develop innovative approaches to conservation.

In the GTA there are at least three trust options that could be considered.

> **It would be possible to establish a body, perhaps called the GTA Greenlands Foundation. This body, which could be set up as a provincial Crown agency with an appointed board of directors, would not be involved directly in land purchase or management. Rather, it would act as a co-ordinating agency to ensure that the opportunity to create a green infrastructure for the GTA was not lost, working both through existing government agencies and through non-government groups. It would work to raise public awareness of the value of greenlands, encourage stewardship and local initiative in securing natural and recreational areas, and provide grants-in-aid to various greenlands projects. It could also conduct research and act in an advisory capacity to the Province.**
>
> **This GTA Greenlands Foundation could also administrate a Greenlands Trust Fund, which could provide financial assistance to projects of conservation authorities, municipalities, and non-profit groups. It could also act as**

a low-interest backer for conservation-minded organizations and lend money to other trusts at a preferential rate of interest (the British Architectural Heritage Fund in Britain uses such a mechanism to assist in the preservation of historic buildings).

Instead of establishing a new foundation, the Ontario Heritage Foundation could undertake the function with an expanded natural heritage focus.

A second trust option is the establishment of a regionally based trust, likely for the Oak Ridges Moraine. This trust would perform many of the functions which trusts in other areas currently carry out and would promote stewardship and seek public support and membership. It would become actively involved in land stewardship or acquisition projects and would foster a co-operative relationship with regions and conservation authorities.

A third option is the formation of other community-based trusts on a smaller scale. These trusts would vary in structure and mandate and could seek advice, technical assistance, and sometimes financial assistance from a GTA Greenlands Foundation or an Oak Ridges Moraine Trust.

5.4.3 Incentives for Land Stewardship

The current incentives for involvement in land stewardship are limited. In many cases, it is the good will of the private landowner that acts as the catalyst for conservation measures. There are, however, a range of benefits available to those wishing to participate in stewardship programs.

Landowner Recognition

Recognition for conservation-minded landowners can take a variety of forms. The formal award, a plaque with a mounted bronze medallion and a nameplate signed by the provincial Premier and the Chairman of the Natural Heritage League, is ceremoniously presented to landowners who have made a verbal stewardship agreement. Newsletters sent to participants also act as an incentive to stewardship.

Management agreements also provide for some landowner recognition. For example, a green triangle sign located on a woodlot under Ministry of Natural Resources management identifies the owner as conservation-conscious.

Property Tax Rebates

The Conservation Lands Tax Rebate Program provides for a tax rebate for landowners who sign written stewardship agreements. Under this program, landowners are eligible for a 100-per-cent property tax rebate on the natural area portion of their land. This refund usually amounts to no more than a few hundred dollars and does not apply to lands owned by or under easement to land trusts. It is limited to certain categories of land which do not necessarily include all regionally significant greenlands.

This financial incentive for landowners could further encourage conservation if it were extended to include all regionally significant greenlands.

In addition, the tax rebate could be applied to significant greenlands owned by land trusts.

Personal Income Tax Deductions

When a gift of property is given to an organization other than the Crown, a receipt is given for the full amount of the donation. However, the amount claimed on the tax return in any one year cannot exceed 20 per cent of net income. Gifts to the Crown are not limited to 20 per cent of net income; the full amount of the gift can be claimed in the year the gift is made.

Gifts to the Crown include those given to an agent of the Crown. As presently structured, the Ontario Heritage Foundation is the only such agent in Ontario; the conservation authorities are not. Therefore, a donation to a conservation authority would not qualify as a gift to the Crown. The Nature Conservancy of Canada is a charitable organization, and, as such, receipts for gifts to the Nature Conservancy are subject to the 20-per-cent limitation.

If a prime objective is to encourage donations of land for conservation purposes, a key incentive would be to have a GTA Greenlands Foundation, if established, designated as an agent of the Crown.

While the inexperience of Ontario's appraisal industry with conservation easements makes the issuing of donation receipts more complex than usual, at least one receipt for an easement has been issued, and accepted, by Revenue Canada.

This process could be expedited by providing assistance to legal, appraisal, and real estate professionals in developing appropriate and efficient techniques in support of the evaluation of easements for tax receipt purposes.

A good example of this support is seminars put on by the American Institute of Real Estate Appraisers on Appraising

Conservation and Preservation Easements. Using lectures and case studies, participants learn techniques and pointers on the valuation of open-space easements.

Transfer/Sale of Development Rights

In many U.S. states, landowners of naturally significant properties have the option to sell their development rights or to transfer them to another portion of property. This provides a form of compensation to landowners for the loss of value resulting from severe development restrictions or from their own commitment to conservation. In some states, the government purchases the development rights; however, experience in New Jersey and Maryland, two states that have comprehensive programs related to the transfer or purchase of development rights on agricultural land, has shown the cost of purchasing the rights to be very high compared to the amount of land actually protected. For example, since 1981, the State of New Jersey has spent about $50 million to protect about 12,000 acres of agricultural lands.

Effectively implementing a program involving the sale or transfer of development rights requires a systematic approach. These programs can take many different forms; however, they all share two common features. There is a sending zone from which development rights can be severed, and a receiving zone, which can accept development rights and can be developed more densely. In New Jersey, for example, a property owner can volunteer to sell his development rights to the County Agricultural Development Board. The Board pays for two independent appraisals to determine the value of the parcel under two scenarios; one with a strict development restriction and one that allows development for non-agricultural purposes. The Board then makes a recommendation to the State Agricultural Development Committee. The Committee ranks the applications and makes a decision on whether those development rights should be purchased.

An increasingly favoured mechanism is the transfer of development rights. Under this scenario, owners in designated protection or limited development areas are given the right to sell their development rights privately on the open market in exchange for legal restrictions on the use of their lands. The purchasers of the development rights in designated development areas are then permitted higher densities on their property. The New Jersey Pinelands project, with a goal to protect more than 400,000 hectares (1,000,000 acres) in the New Jersey Pine Barrens, is the largest transfer of development rights programs in that country. The project is run by the Pinelands Commission, an independent state agency with overriding land-use jurisdiction over seven counties and 52 municipalities.

Montgomery County, Maryland, is another good example of a transfer of development rights program. Development rights are transferred through municipal master plans from a rural density zone to existing urban areas. The value of the development rights is determined solely through the private market and it requires little public funding.

In Ontario, the transfer of development rights has been used in some urban areas to protect historic landmarks in return for increased densities elsewhere. Provincial legislation would be required to implement a purchase or transfer of development rights program on a broad regional or inter-municipal level to preserve greenlands.

> **The Region of Niagara has conducted extensive research concerning the applicability of these kinds of programs to its area. Such an initiative should be encouraged, and further research should be conducted to determine if these measures would be suitable for other areas in the province. In the GTA, such research could be led by a GTA Greenlands Foundation.**

The transfer/sale of development rights tends to be a complex, time-consuming process. A systemized approach, accompanied by a series of conditions, could be developed to ensure that the density transferred is fair and that the property which is receiving the rights complies with other planning objectives.

5.5 Other Mechanisms

There are several other mechanisms that can be considered in securing or supporting greenlands. They are discussed as follows.

5.5.1 Tree-Cutting

Increasingly, concern is expressed regarding the cutting of trees in woodlots. In a number of instances, this involves the elimination of the woodlot completely. Often there is local outrage, with the call to determine how this could happen, why no one was informed, and how this could be prevented in the future.

Such discussions often turn to the Trees Act and the municipal by-laws that can be passed under it.

The Trees Act was originally set up in the 1940s to provide for the control of the clear cutting of trees. In the case of the Greater Toronto Area, the upper-tier regional municipality is the level with the power to pass a by-law "restricting and regulating the destruction of trees by cutting, burning or other means, and providing for the appointment of officers to enforce the provisions of any by-law". By-laws passed under the Act can be limited territorially. Therefore, a by-law can be applied to specific areas or specific lower-tier municipalities only if that is the desire. By-laws passed under the Trees Act are approved by the Minister of Natural Resources.

The application of the Act must be in keeping with good forestry management. This has generally been translated to mean renewable wood production. By-laws passed under the Act usually identify individual tree species and the minimum size (usually the diameter) before that type of tree can be cut.

However, with wooded areas at a premium in urban and urbanizing areas, municipalities increasingly would like to see these by-laws used to address other concerns -- e.g., more environmental, as well as wood production.

This broader application of the Act is possible. The Act defines "forestry purposes" to include "the production of wood and wood products, provision of proper environmental conditions for wildlife, protection against floods and erosion, recreation, and protection and production of water supplies".

Some municipalities also would like to see changes so that woodlots could not be cut without first receiving municipal approval. The potential problem here would be the refusal of any and all cutting and thus the implications on "freezing" the use of private lands. Alternatively, it may be desirous to require prior municipal knowledge before cutting occurs. This would at least provide the opportunity for the landowner and the municipality to discuss any respective plans for the woodlot.

Many concerns are expressed today when whole woodlots are eliminated. Such clear cutting is already counter to the intent of the Act. The problem is two-fold.

Many municipalities have not passed by-laws under the Trees Act. In the case of the Greater Toronto Area, only the Region of Halton has a trees by-law. Some local municipalities, such as the City of Toronto, have the power to pass by-laws in ravines to regulate the destruction of trees or other natural vegetation, as provided for through special legislation.

The second problem is the size of the penalties under the Act -- a maximum of a $5,000 fine or three months in jail, or both. Unfortunately, some individuals may consider a fine of $5,000 as a fee for a licence to cut.

As an option, the existing wording of the Act could be reviewed to determine if the focus could include other factors, more environmental in nature, as well as wood production.

Changes to the Trees Act could be made to prevent tree cutting without the prior knowledge of the municipality, to provide the power to issue stop-work orders in support of the enforcement of by-laws and to substantially increase fines and penalties.

There is always concern that by-laws under such an Act would control an individual cutting down a single tree. The Act presently contains a number of exceptions to address this. For example, it does not apply to trees growing in a woodlot that is 0.8 hectares (2 acres) or less in area, unless the by-law expressly provides for it. Also, a by-law under the Act generally does not prevent trees being cut by the owner for his or her own use. "Own use" is defined as not including "any sale, exchange or other disposition of the trees that are cut".

5.5.2 Compact Urban Form/Cluster Development

It is generally accepted that traditional development patterns in the Greater Toronto Area are land-extensive. In addition to reducing the amount of land available for other uses, extensive development is difficult to support from the point of view of water and sewer services and public transit.

More compact urban forms would help address these problems. The Greater Toronto Co-ordinating Committee is presently investigating this as one of several possible approaches for the future development of the Greater Toronto Area. In more rural areas, standard land-use planning approaches are often applied. As a result, rural flavour and the advantages of rural landscapes can be lost. Standard lot sizes are imposed, resulting in more land not being available for other uses.

Clustering or grouping development would concentrate it in a smaller area, leaving more land in its natural state or available for other uses such as agriculture. Residents may very well be prepared to forego larger lots in exchange for immediate access to much larger natural landscapes.

There is very little application of cluster development in Ontario at the present time. The University of Guelph's School of Landscape Architecture has undertaken studies and proposed several examples of cluster development for rural areas in Ontario. There are several successful examples of such an application in the United States, most notably in the Connecticut River Valley in the State of Massachusetts.

> **As a general approach to reducing the amount of land that is developed, as opposed to the amount of development, all levels of government could investigate and promote more compact urban forms, and the clustering of development and more creative layouts in urban fringe or rural areas.**

The one possible concern for clustering development in urban fringe or rural areas is private sewage (septic) systems. In this regard, research into the feasibility of more effective systems or communal systems should occur.

5.5.3 Buffer Zones

Often, natural features can be affected by activities that occur on adjacent lands or even farther away. For example, if runoff from a site is not properly controlled during construction, dirt and materials readily end up in watercourses resulting in polluted waters, degraded wetlands, and the loss of fish habitat. Also, development immediately on the top of valleys can be not only visually intrusive but also can result in degradation through the indiscriminate dumping of debris down the slopes.

Buffer zones, consisting of native or riparian vegetation, adjacent to valleys or watercourses, help to form a definable boundary between such features and adjacent lands and their uses. Buffer zones can also serve to filter out or trap undesirable materials before entering a valley or watercourse. A zone of native vegetation adjacent to valleys and watercourses can provide habitat for wildlife and provide the necessary cover for their movement from one area to the next.

There is no one specified size of a buffer zone. The size is dependent on the purpose of the buffer zone and the specific conditions of the area. Generally, a minimum of 10 to 15 metres (33 to 50 feet) is suggested. In the case of buffering to help protect cold water streams and fisheries, the Ministry of Natural Resources recommends a buffer of 30 metres (100 feet).

> **Therefore, to help maintain the natural integrity of valleys and watercourses and to visually separate such areas from adjacent development, the concept of establishing riparian buffer zones could be promoted. Such buffer zones should be a minimum of 10 to 15 metres (33 to 50 feet) in width.**

While there are several ways to promote the creation of riparian buffer zones -- e.g., acquisition, conservation easements, etc. -- the one approach that should be investigated fully is the land-use planning and development process, e.g., zoning by-laws, site plan control, plan of subdivision, density bonus by-laws, etc.

5.5.4 Tax

A tax is used as a means to generate funds for a particular purpose.

A possible tax option is a surcharge on new development, particularly residential, adjacent to natural greenlands such as valleys, watercourses, ponds, wetlands, conservation areas, etc. Lots backing on to such areas are almost always today charged a premium for location. Real-estate sections of newspapers often contain new developments being promoted on the natural amenities of the immediate or surrounding area.

A development tax in this situation would help generate funds for the acquisition of other greenlands.

Therefore, the use of a tax option could generate funds to help establish a regional greenlands system.

However, the establishment of any new tax would have to be considered in the light of the existing land-related taxes in place (e.g. land transfer tax, municipal lot levies).

6. INSTITUTIONAL ARRANGEMENTS

Once the regionally significant greenlands have been identified, and after the various tools for securing greenlands have been determined, the institutional arrangements for the implementation of the strategy must be considered. Without thoughtful consideration of who should take responsibility for greenlands protection and management, the strategy is bound to fail.

There are basically three options for institutional arrangements: the existing organizations take responsibility for the areas which fall under their jurisdiction; a new agency is created; or a co-ordinating body, without legislative authority, is established.

6.1 Existing Organizations

Under this option, the organizations that currently have responsibilities related to greenlands would implement the associated portions of the strategy. For example, conservation authorities would continue to have jurisdiction over their watersheds; regions and area municipalities, through their official plans, would be responsible for greenlands within their respective areas. The Province would also have a role to play through the initiatives of its various ministries. This does not mean that changes would not be made to ensure that significant spaces are protected and enhanced. These actions would be taken; however, the implementation of the changes would be shared among the responsible agencies in the GTA.

There are numerous advantages to this approach. It is relatively easy to implement and would take advantage of the expertise which the existing agencies have built up. No new bureaucracy need be created and the existing agencies would be able to act immediately to implement the strategy and adopt any new policies and programs which are required. In addition, greenlands are just one component of the GTA and strategies to protect open spaces and natural areas must be considered in the broad context of urban growth strategies. The existing agencies do not focus on single issues and therefore are able to understand and work within the bigger picture and help strike a balance between development and greenlands.

There has been criticism, however, that the current agencies have not gone far enough in the protection of greenlands. In addition, there is little consistency or co-ordination in the approach to greenlands across the various agencies.

6.2 New Agency

A second option for an institutional mechanism to deliver the greenlands strategy is the creation of a new agency. Such an agency would require new legislation to give it regulatory power, and membership could be appointed or elected.

Such a new agency would institutionalize the commitment to the protection of greenspace in the GTA. Its members would be dedicated solely to this purpose. On the negative side, the creation of a new agency is cumbersome and very time-consuming, and would require an entire new bureaucracy. Costs could be tremendous. Co-ordination with other initiatives taking place in the GTA would be difficult and it would create yet another agency in an already complex system.

6.3 Co-ordinating Body

A third type of institutional arrangement possible for greenlands in the GTA is a co-ordinating body. This could be a body, possibly made up of representatives from various levels of government, conservation authorities, groups or individuals with an interest in greenlands. This group would not have any legislative authority; however, it could foster inter-regional co-operation and bring interested parties together at the table to discuss issues of mutual concerns. Greenlands need not be the only focus of the coordinating body; it could also be linked to an urban structure strategy for the GTA.

The advantages of this option are that it does allow for a co-operative, consensus-building approach to greenlands protection. Each agency would still implement the programs under its jurisdiction; however, such a body would provide a forum for co-ordinated, strategic planning for the entire geographic area. This option would avoid the costs and complexities of a new agency, while avoiding the difficulties associated with an unco-ordinated approach to greenlands throughout the GTA.

One example of a co-ordinating type body which performs an important research, planning, and implementation role is seen in the States of New York, New Jersey, and Connecticut. In 1929 these three States formed a Regional Plan Association which has pursued public policies of benefit to the entire 31-county region with a particular emphasis on open spaces. Over the past 60 years it has helped stimulate and organize groups and land trusts and has provided the opportunity for leaders to agree on solutions to problems in housing and transportation, education, environmental quality, and human services. In addition to providing a forum for decision-makers to discuss issues, it organizes lectures and special events and produces research publications.

7. PUBLIC ROLE

The protection and enhancement of greenlands is not just a responsibility of government agencies. Citizens benefit from open spaces and natural areas and they should actively participate in their protection. Many individuals do a great deal right now -- however, the enthusiasm which people have shown should be channelled into measures which will contribute to a greenlands strategy in the most effective way. The need for public ownership and participation in such a strategy is something that individuals have indicated is absolutely essential to the strategy's success.

There are many people who care about the environment and want to protect greenlands. While individually their voices are important, by joining together with like organizations they are able to pool their resources and actively and effectively participate in greenlands protection. Some groups have already made efforts to join with their counterparts to form a representative organization (e.g., Federation of Ontario Naturalists, Conservation Council of Ontario, and Coalition of Scarborough Community Associations). This can provide groups with additional resources and prove to be an important networking and information-sharing tool.

> **Efforts should be made for groups with similar objectives to combine some resources which may result in a stronger, less fragmented voice for its members.**

There are a number of ways by which the public can participate in a greenlands strategy. The measures discussed are not mutually exclusive, nor are they exhaustive.

7.1 Public Education

Many individuals and groups have indicated during the course of this study that there is a need to educate all sectors of the population about the importance of protecting greenlands. Currently, many people lack information about why greenlands are important, and about the techniques available to protect and manage them. The education and information dissemination role is not one that should be taken on by government agencies alone. In many cases, conservation and community groups have more knowledge about specific significant areas in their jurisdictions than do larger organizations and are better able to effectively communicate with local citizens. In addition, because they know their communities well, they may be able to best judge what kinds of public participation measures are most appropriate for their areas. Some conservation organizations such as the Nature Conservancy have already been actively involved in education programs, producing publications and videos, but a more comprehensive program is needed.

> **Private organizations and individuals should join with government agencies to produce publications, newsletters, and videos, and stimulate discussion with both public and private landowners. This community outreach could be expanded from its current state to inform people about the importance of greenlands, the location of regionally significant natural areas, and the incentives available to encourage private stewardship. Land trusts could also play an important role in educating communities regarding land conservation.**

7.2 Research/Advisory

The public can also make an important contribution to the protection of greenlands by performing a research and advisory function. This can include informal discussions with government agencies and larger conservation groups, the publication of research reports or fact sheets, or more formal participation on advisory committees, such as an Ecological and Environmental Advisory Committee (EEAC).

Halton, Niagara, and Waterloo regions currently have EEACs, each with a different kind of membership and each with a different focus, but, seemingly, all very successful. All have significant professional, academic, and community representation. Halton and Niagara also have regional politicians sitting on their EEACs. EEACs can provide advice in preparing official plans, review and advise on the environmental impacts of proposed development, and undertake research projects and education programs.

The use of similar public support committees by conservation authorities and other public bodies to assist in major initiatives such as watershed planning, could also be encouraged.

The formation of EEACs could be encouraged for all Regions in the GTA, thereby providing a greater opportunity for citizen participation in the decision-making process.

It is important that the public be included as part of the decision-making process concerning greenlands. Both informal and more formal research and advisory mechanisms should be developed to achieve this objective.

7.3 Rehabilitation/Enhancement

Many people in the GTA have participated in rehabilitation or enhancement programs of one sort or another. For example, recognizing the important role that trees play in a healthy environment, groups such as the Boy Scouts have had annual tree-planting days. Trees for Today and Tomorrow has, as its goal, the planting of 50 million trees in Southern Ontario. Projects include the reforestation of many of the river valleys in the GTA and ask the public to be involved by "adopting a tree".

To encourage similar efforts, on May 7, 1990, the Minister of Natural Resources announced the creation of a new foundation, Trees Ontario, to help corporations, groups, and individuals who want to improve the province's natural environment by planting trees. Such programs provide an opportunity for the public to become actively involved in the enhancement of natural areas.

Citizen-based efforts have also helped clean up our rivers, valleys, and trails.

These programs are effective and should be supported. There are many different forms such rehabilitation or enhancement activities can take, and creative programs that rely on the enthusiasm and participation of individuals should be encouraged.

7.4 Private Landowner Initiatives

The techniques possible through land stewardship are all available to members of the public. In fact, such programs rely on the active participation of landowners. The public should not only be ready to respond to government stewardship overtures, but they should encourage and initiate measures to protect private lands.

There are many examples of active citizen involvement in greenlands protection. Efforts have been ongoing in the GTA as well as in the rest of the province; however, an example of very organized citizen input is seen in the San Francisco Bay area. The Greenbelt Alliance is a citizen membership organization that is dedicated to the protection of the region's greenbelt. It provides assistance to people trying to protect lands in the area, conducting training sessions on techniques of greenbelt protection and organizing meetings to allow conservationists in the area to meet one another to share their knowledge and skills. This group also produces quarterly newsletters, fact sheets, and reports.

Of particular note is a publication put out by the Alliance entitled "Tools for the Greenbelt: A Citizen's Guide to Protecting Open Space". This how-to guide for the public gives tips on how to select and plan a protection project, the techniques for protection, as well as case studies and a list of important phone numbers and addresses.

The public also plays an important role in the protection and enhancement of the Meewasin Valley, which runs through Saskatoon, Saskatchewan. Volunteers assist in the research, planning, and development of activities in the Valley. Closer to home, many conservation authorities have foundations, comprised primarily of members of the general public who live near the watershed, that assist the conservation authorities in fund-raising for various projects.

There are many excellent programs and activities undertaken by citizens which have not been mentioned. These efforts should be continued and enhanced. In addition to the current projects under way, the public should take an active role in education, information dissemination, enhancement activities, and land stewardship as well as in the research and planning of greenlands protection. It is only with the support and active participation of the public in the planning and implementation of greenlands protection that these measures can be successful.

CONCLUSIONS

(1) Action

While there is a need for action, there is an urgency for action now for certain areas, due largely to development pressures. Therefore, the deliverability or time required to implement a particular action should be a key consideration.

There is strong public support for a Greenlands Strategy, but there is also some scepticism, scepticism directed at all levels of government, regarding the "political will" to follow through on the actual implementation of a strategy.

(2) Greenlands

Greenlands are increasingly being considered as more than park and open-space areas or serving just one end. The significance of greenlands in contributing to the quality of life, both mentally and physically, and to the quality of the environment in which we live, is starting to be understood.

Increasingly there is concern about the loss of greenlands without first the opportunity to explore ways that development and greenlands possibly could co-exist.

Also, there is the need for government-sponsored greenlands management and land-stewardship programs to be more widely ecologically based rather than being based largely on economic yield.

(3) Present Circumstance

Within the Greater Toronto Area, there are a number of public bodies and groups involved in greenland protection or management. However, without a central focus, there is a wide variation in approaches resulting in fragmentation, inconsistency, and confusion. This is particularly true concerning the application of the Planning Act from one municipality to the next.

While some amendments are required, the Planning Act could be more effectively used to help protect greenlands. What is required is an increased consciousness at all levels, but in particular at the local and regional municipal levels.

Greenlands must be actively considered at all stages throughout the land-use planning process. A better balance between lands to be left in a natural state and lands considered to be developable must be struck.

(4) Oak Ridges Moraine Area

Of the major natural features in the Greater Toronto Area -- the river valleys, the Lake Ontario waterfront, the Oak Ridges Moraine Area, the Niagara Escarpment, and Lake Simcoe, it is the Oak Ridges Moraine Area that requires the greatest attention at this time.

Within the GTA, the Moraine Area spans 3 regional and 14 local municipalities and 5 conservation authorities.

It is a significant and sensitive natural feature, particularly in relation to groundwater, the sensitivity of its soils to certain development and practices, and the significance of the slopes of the Moraine as a headwater area for many watercourses.

Based on what is known today, more specific attention must be paid to the Oak Ridges Moraine Area. But in addition, the full extent of the Moraine Area's significance and sensitivity should be determined through further study.

(5) A More Regional Context

Collectively, we must continue to re-orient our thinking so that long-term implications, as well as short-term, are considered.

The term "cumulative effect" is often used today. There is no one magical approach to addressing cumulative effect. It is as much a mind set as it is the development of techniques to measure it.

Growth and development within the GTA will continue. However, we must change our approach when considering greenlands in the context of land-use changes. What is required is a true consideration of all the implications -- not just those on a particular site but on the larger surrounding area and not just those of today but of the future as well.

Implications must be examined and trade-offs made in a broader context, both more regional and longer-term, than in the past.

(6) Overall Approach

There are three complementary approaches to addressing greenlands within the Greater Toronto Area; regulation, stewardship, and acquisition. Substantial progress can be made in a three to five year period, with a concerted effort. However, what more appropriately is required is a long-term commitment over time, working towards one clearly defined end -- the securing of a regional greenlands system.

RECOMMENDATIONS

(1) The Province provide clear direction through the endorsement of a Greater Toronto Area Greenlands Strategy with the goal of improving the quality of life through the establishment of a regional greenlands system consisting of a variety of types of greenlands, accessible to as many people as possible, where appropriate.

(2) To guide land-use planning and development, appropriate ministries prepare guidelines addressing: a) urban drainage/storm water management; b) water conservation (including groundwater); and c) how existing tools under the Planning Act can appropriately address greenlands.

(3) As greenlands serve a variety of functions, the provincial resource-based ministries review their management and land stewardship programs to ensure that they are more widely ecologically based rather than based primarily on economic yield or being singular in purpose.

(4) The Province prepare a Greater Toronto Area Greenlands policy statement pursuant to section (3) of the Planning Act.

The overall thrust of the policy statement would be to limit uses to those which would not reduce the attributes of greenlands.

With particular reference to valleys and watercourses, they should be left in as natural a state as possible. Thus, various uses, including some types of intensive recreational endeavours, would be limited.

To help maintain the integrity of such areas as valleys and watercourses, and to assist in visually separating such areas from adjacent development, the establishment of riparian (natural) buffer zones of at least 10 to 15 metres (33 to 50 feet) would be promoted.

The policy statement would stress the significance of nodes, such as municipal parks, and of pathways and corridors in linking regional greenland systems. It would also stress the value of municipal parks and other areas in providing public access to valley systems.

Further, the policy statement would stress the need for more intensive and clustered forms of development, thereby maximizing the lands available for greenlands and other uses.

(5) Due to the significance and sensitivity of the Oak Ridges Moraine Area, the increasing development pressure it is under, particularly for that section in the Towns of Richmond Hill and Aurora, and the increasing concerns about the types of development and how development occurs, the Province declare a general expression of provincial interest for the Oak Ridges Moraine Area, under section (2) of the Planning Act.

The objective of declaring provincial interest would be to provide the time required to conduct a comprehensive land-use planning study of the Oak Ridges Moraine Area. In the interim, the Province would review all proposed official plan amendments and rezoning applications within the Moraine Area. In the specific instances of the Towns of Richmond Hill and Aurora, the Province would also review plans of subdivision.

Where a proposed land-use change has not adequately addressed the sensitivities of the Moraine Area or where a proposed land-use change is considered premature prior to the completion of the comprehensive land-use planning study, the Minister of Municipal Affairs could make a specific statutory declaration of provincial interest, which would result in the matter going to the Ontario Municipal Board and Cabinet making the final decision, or make use of other powers, as provided for under the Planning Act.

A two-year comprehensive planning study of the Oak Ridges Moraine Area would be co-ordinated by the Province and would include upper and lower-tier municipalities, conservation authorities, and other interested groups.

The overall intent of the study would be a more consistent treatment of development within the Moraine Area from one municipality to the next. The study would examine the types of land uses acceptable or not acceptable within the Moraine Area and the types of background studies and controls that would be appropriate to help safeguard the sensitivity of the area.

(6) Through the official plan process, regional municipalities more clearly establish development, greenlands, and rural envelopes.

Development envelopes could be broken down into urban and near-urban areas.

Regional municipalities need not designate specific land uses within each envelope. This would remain the responsibility of local municipalities. However, regional municipalities would be responsible for assessing the overall implications of each envelope on a region-wide basis from environmental, social, and economic perspectives. The limits of the envelopes could not be modified for at least a five-year period and then could only be modified as part of a regional municipality's overall review of its official plan.

With regards to the greenlands envelopes, each regional municipality would prepare a regional greenlands action plan to assist in implementation.

Each respective regional municipality would fine-tune the appropriate sections of a Greater Toronto Area Greenlands Strategy and augment it with input from local conservation authorities and local municipalities.

The action plans would also concentrate on linking local park systems to regional greenlands systems through the most appropriate series of pathways and lateral connectors.

Upon completion of the respective action plans, three to five-year implementation packages would be prepared, identifying which public body or group was responsible for what aspects.

(7) To minimize the length of time between when a site is prepared for development and when development actually commences, amendments to the Planning Act be made such that site preparation -- e.g., removal of vegetation, stockpiling of top soil, etc. -- cannot occur until the necessary development approvals or draft approvals have been obtained.

Amendments to the Planning Act also be made such that valley lands may be dedicated to the local municipality, in addition to lands dedicated for park purposes.

(8) To fill the gap between the definition of development under the Planning Act and the specific hazard orientation of a conservation authority's regulation, amendments be made to the Conservation Authorities Act such that the regulatory powers under section (28) of the Act are expanded so that the placing or dumping of fill, the location of buildings and structures and the alteration of a waterway, anywhere in a valley system, can be regulated from a conservation/protection aspect as well as a hazard aspect.

Also, with the view to clarifying responsibility, the Minister of Natural Resources investigate any possible duplication of responsibilities between a conservation authority's regulation and the application of the Lakes and Rivers Improvement Act.

(9) As part of its responsibility in issuing water taking permits under the Ontario Water Resources Act, the Ministry of the Environment investigate ways of undertaking studies so that the overall extent of the water resources of a watershed or aquifer system can be assessed. After which, a water budget could be determined for all the various uses, present and future, which would include an analysis of the amount available for water-taking purposes.

The Ministry of the Environment undertake research into more efficient septic system designs and materials for use in areas with rapidly draining soils. This research could also examine communal-type septic systems servicing two or more dwellings, thus potentially reducing the present space requirements for estate residential lots.

(10) The Province establish a five-year, $100-million Greater Toronto Area greenlands acquisition program. The program to be set up on a matching grant basis with half the funds

provided by the Province and the other half by local or interest groups, other government bodies, the private sector, etc.

While recognized that total reliance on acquisition to secure greenlands is not feasible in general, acquisition would only be considered where a site was threatened and other means to secure it had failed or where the site would provide for public access and other means to secure the land where not viable.

(11) The guidance and monitoring required to assist in the implementation of a Greater Toronto Area Greenlands Strategy be provided through a co-ordinating body.

A new level of government or a new public body need not be created.

Representation on the co-ordinating body would include the Province, regional and local municipalities, and local conservation authorities.

As greenlands form the framework within which urban development can occur, consideration could be given to having the co-ordinating body responsible for overseeing the implementation of the Greater Toronto Area Greenlands Strategy linked with the body responsible for overseeing the implementation of the Greater Toronto Area Urban Structure Strategy.

(12) The existing wording of the Trees Act be reviewed to determine if the focus could include other factors, more environmental in nature, as well as wood production.

To reduce the number of instances where woodlots are eliminated without the knowledge of local municipalities and thus the opportunity to explore other avenues to achieve what is desired, amendments be made to the Trees Act so that trees cannot be cut without the prior knowledge of the municipality. Notwithstanding this proposed amendment, minimum area size provisions and exemptions, such as cutting for personal use, as presently defined in the Act, should be retained.

Also, amendments be made to the Act to include the power to issue stop-work orders and to increase the size of penalties for the contravention of a by-law passed under the Act.

(13) As a general approach to reducing the amount of land that is developed, as opposed to reducing the amount of development, all levels of government be encouraged to investigate and promote more compact urban forms (i.e., intensive versus extensive forms of development). Concepts such as cluster development and more creative layouts sensitive to the surrounding landscape should be explored.

To help facilitate moves in this direction, the Province, through the ministries of Municipal Affairs, Housing, Natural Resources, and the Environment, would research the matter and prepare a guideline document.

(14) The Province establish a Greater Toronto Area Greenlands Foundation to assist in giving a more co-ordinated focus to greenlands and to provide a means for public/private partnerships to protect greenlands.

The Foundation would be responsible for the administration of provincial acquisition funds on a matching-grant basis. Local interest groups, other public bodies, or the private sector would be responsible for raising the remaining funds.

The Foundation would actively encourage the formation of an Oak Ridges Moraine Conservation Land Trust or other types of management bodies.

Further, the Foundation would be charged with exploring landowner incentives including recognition awards, the expansion of the Conservation Land Tax Rebate Program to include all lands identified as regional greenlands, greater availability or use of personal income tax deductions for land bequests or easements, the transfer and/or sale of property development rights, etc.

(15) More formalized public involvement in securing, managing, and enhancing greenlands is to be encouraged.

In particular, it is strongly encouraged that regional municipalities give consideration to establishing regionally based Ecological and Environmental Advisory Committees as exist in areas such as Halton, Waterloo, and Niagara.

Such groups could assist Regional Councils on a range of environmental matters, including greenlands.

Also, conservation authorities are to be encouraged to establish working groups to assist in major endeavours such as the preparation of watershed management strategies.

(16) The implementation of a Greater Toronto Area Greenlands Strategy will take the collective effort of many different bodies and groups. To this end, local groups and special interest groups, as well as government bodies, are to be encouraged to assist in various ways, including informing and educating the public on the significance of greenlands in the Greater Toronto Area.

APPENDIX I

TERMS OF REFERENCE
ON THE
GREATER TORONTO AREA GREENLANDS STRATEGY

Green landscapes and waterways adjacent to urban areas contribute greatly to the quality of life of Ontarians. They serve as significant recreational assets, particularly when linked together. They protect water quality in river courses and contribute to public safety by moderating flood levels. They also safeguard many facets of our cultural and natural heritage.

Recognizing these values, Mr. Ron Kanter, M.P.P. St. Andrew -- St. Patrick, will make recommendations pertaining to:

1. identification of a regional system of natural areas and landscapes which will:
   - protect the diversity of fauna and flora, ecosystems, communities, and landforms of the GTA;
   - maintain the water quality and natural flow regulation of rivers and streams within the GTA;
   - provide expanded opportunities for a variety of public outdoor recreation activities near urban settings;
   - contribute to a continuous natural open space system to provide visual separation of communities and to provide continuous corridors between ecosystems;
   - protect significant scenic and cultural landscapes, including archaeological resources.
2. development and co-ordination of appropriate protective and enhancement strategies for significant landscapes, including the examination of the role of municipal land-use planning, private land stewardship, conservation easements, landowner agreements, provincial programs and incentives, and public acquisition;
3. structuring of the most effective institutional arrangements to implement the strategy including consideration of new mechanisms such as nature trusts and other creative forms of community-based conservation movements to complement public-sector initiatives. Initiatives to encourage private-sector participation will also be encouraged.

While most of the work of the greenlands strategy will focus on the valleys and waterways of the GTA, Mr. Kanter will also pay special attention to their relationship to the Lake Ontario waterfront, and to the ongoing activities of the Royal Commission on the Future of the Toronto Waterfront.

Mr. Kanter will call on the advice of experts, groups, agencies, and governments experienced in the protection of natural landscapes to assist in his review.

The Greater Toronto Area Greenlands Strategy will be provided to the Cabinet Committee on Housing and Community Development by June 1990.

APPENDIX II

Contacts Made Throughout Study

INTEREST GROUPS AND ASSOCIATIONS

Aggregate Producers Association
Canadian Parks and Wilderness Society
Conservation Council of Ontario
Federation of Ontario Naturalists
Metropolitan Toronto Remedial Action Plan Team
Nature Conservancy of Canada
Oak Ridges Moraine Working Group (MTRCA)
Ontario Historical Society
Pickering Rural Association
Protect Our Water and Environmental Resources
Save the Oak Ridges Moraine
Save the Rouge Valley
Thornhill-Vaughan Residents Association
Toronto Association of Business Economists
Toronto Field Naturalists
Trees for Today and Tomorrow
University of Toronto Outing Club
University of Toronto Student Administrative Council
Urban Development Institute

ONTARIO MINISTRIES

Ministry of Agriculture and Food
Ministry of Culture and Communications
Ministry of Energy
Ministry of Government Services
Ministry of Housing
Ministry of Municipal Affairs
Ministry of Natural Resources
Ministry of Northern Development and Mines
Ministry of Revenue
Ministry of the Environment
Ministry of Tourism and Recreation
Ministry of Transportation
Ministry of Treasury and Economics

PUBLIC AGENCIES/COMMISSIONS

Central Lake Ontario Conservation Authority
Credit Valley Conservation Authority
Ganaraska Region Conservation Authority
Halton Region Conservation Authority
Lake Simcoe Conservation Authority
Metropolitan Toronto and Region Conservation Authority
National Capital Commission
Niagara Escarpment Commission
St. Lawrence Parks Commission

REGIONAL MUNICIPALITIES AND LOCAL MUNICIPALITIES

Municipality of Metropolitan Toronto
Regional Municipality of Durham
Regional Municipality of Halton
Regional Municipality of Peel
Regional Municipality of York

Regional Planning Commissioners Committee

City of Etobicoke Environment Committee
City of Scarborough Waterfront Committee
Local Parks & Recreation Departments within Metropolitan Toronto
Metropolitan Toronto Waterfront Committee
Scarborough Social Planning Council
Town of Aurora
Town of Markham
Town of Uxbridge
Town of Vaughan
Township of King

OTHERS

Baker, William, Tourist, Park and Recreation Consultants
Banting, Douglas, Professor, Ryerson Polytechnical Institute
Cherry, John, Professor, University of Waterloo
Demb, Alan, Land-Use Consultant
Francis, George, Professor, University of Waterloo
Fraser, Robin, Past President, Nature Conservancy
Harrington, Glenn D., Harrington and Hoyle Ltd., Landscape Architect
Hill, Alan, Professor, York University
Howard, Ken, Professor, University of Toronto
Kehm, Walter H., Professor, University of Guelph
Nisbet, J. Robert, Bird & Hale Limited Consulting Engineers
Planck, Dr. R. Jon, Cumming Cockburn Consulting Engineers
Regier, Henry, Professor, University of Toronto
Rust-D'Eye, George, Barrister & Solicitor, Weir & Foulds
Snodgrass, William J., Beak Consultants Limited
Whillans, Dr. Thomas H., Trent University

APPENDIX III

Public Input

Beginning in mid-January 1990, letters requesting comments on a Greenlands Strategy for the GTA were sent to a wide range of groups. These included regional and area municipalities, community associations, special interest groups, citizens, and public agencies. Responses to this request represented a reasonable cross-section of these sectors.

General Themes:

The submissions (95 per cent of them) indicated a great deal of support for a GTA Greenlands Strategy. It is interesting to note, however, that 13 per cent of those in favour of the strategy showed some degree of scepticism, particularly in the timing of its implementation and the political will to achieve it. Some respondents noted that similar exercises completed in the past had been announced but were subsequently reduced in scope or were not implemented.

A theme common to many of the submissions was that the Province must provide clear direction and should play a significant role in the implementation of any strategy.

Also emphasized in the comments was the importance of public "ownership" and participation in the strategy. This role included advice/research, education, enhancement, and stewardship.

More than three-quarters of submissions indicated that a successful greenlands strategy requires a combination of protection methods (e.g., land-use planning/regulations, acquisitions, land stewardship). A clear majority specifically stated that stricter land-use planning controls are needed.

When people were asked to comment on appropriate institutional arrangements, a definite lack of support was indicated for the creation of a new agency to oversee greenlands protection. Preference was instead given to a continued role for existing agencies and the establishment of a co-ordinating body for greenlands.

A substantial number of submissions also expressed concern about the disturbance of sites prior to development approval (e.g., tree/soils).

WRITTEN SUBMISSIONS RECEIVED

1. MUNICIPAL RESPONSES

Region of Durham
Region of Halton
Region of Peel

Borough of East York
(Planning & Development;
Parks & Recreation)
City of Burlington
City of Etobicoke
City of Mississauga (Staff)
City of Scarborough
Town of Caledon
Town of Halton Hills
Town of Milton
Town of Newcastle (Planning)
Town of Oakville
Town of Pickering (Planning)
Town of Scugog
Town of Vaughan (Planning)
Town of Whitby
Township of Mono
Township of Uxbridge

2. MUNICIPAL COUNCILLORS/M.P.P.s/M.P.s

Sam L. Cureatz, Q.C., M.P.P.
Durham East

David Fleet, M.P.P.
High Park -- Swansea

Barbara Sullivan, M.P.P.
Halton Centre

Charles Caccia, M.P.
Davenport

Councillor John Alexander
Town of Caledon

Councillor David J. Culham, Ward 6
Mississauga

Councillor Peter Robertson
City of Brampton

Carol Seglins
Regional Councillor, Region of Peel

3. CITIZENS

Alexander, Don
Banville, Diana
Bennot, Cecilia
Bokhout, Bruce
Buckles, Brian
Dixon-Warren, St. John
Gillies, Evelyn
Graham, Elizabeth
Hardman, Colin
Harris, Murray J.
Kerr, Sharon
King, Arthur
Love, David
Lumsden, Harry G.
MacDonald, Helen
MacMillan, Lyn
Peeling, Bob & Jayne
Roddick, Diane
Rowan, Julian
Salmond, Eric
Sampson, Peggie
Smith, M.C.
Sonstenes, Valerie
Spademan, Ruth
Thompson, Harvey
Venning, Colin
Ward, Kingsley

4. ASSOCIATIONS/GROUPS

i) Professional Associations/Consultants

Baker, W.M.
Better Roads Coalition
Canadian Society of Environmental Biologists
Landscape Planning Limited
Ontario Association of Landscape Architects
Ontario Parks Association
Urban Development Institute

ii) Advisory Committees

City of York LACAC
Etobicoke Environment Committee
Intergovernmental Affairs Committee of the Don River Clean Up Task Force
Interim Don River Clean Up Task Force
Port Granby-Newcastle Environment Committee

iii) Environmental Interest Groups

Aurora Friends of Nature
Canadian Wildflower Society
Durham Region Field Naturalists
Ecology Awareness Group Landscape and Environment
Federation of Ontario Naturalists
Friends of the Spit
Halton Region Federation of Agriculture
Hike Ontario
Humber Heritage Committee
Keep Escarpment Environment Protected
Kingston Field Naturalists
Ontario Trails Council
Pickering Rural Association

Protect Our Water and Environmental Resources
Save the Ganaraska Again
Save the Oak Ridges Moraine
Save the Rouge Valley
South Peel Naturalists Club
S.T.O.R.M. C.L.O.U.D.
The Conservation Council of Ontario
Toronto Field Naturalists
Trees for Today and Tomorrow

iv) Community Associations/Ratepayer Groups

Beach Triangle Residents' Association
Bennington Heights Residents' Association
Buttonville Ratepayers' Association
Centennial Home and School Association
Coalition of Scarborough Community Associations
Concerned Citizens of King Township
Concerned Citizens for Civic Affairs in North York
Cottingham Square Community Association
Cummer Wedgewood Homeowners' Association
Elms Rexdale Residents' Association
Glen Lake -- High Park Residents' Association
Grantbrook Yonge Community Association
Greenwood and Area Ratepayers' Association
Lakefront Owners' Association
Lakeshore Ratepayers' Association
Mildenhall Area Ratepayers' Association
North Woodbridge Community Association
Oak Ridges Moraine Ratepayers' Association
Owners of Lakefront Properties
Seven Oaks Community Association
South Applewood Residents' Association
South Rosedale Ratepayers' Association
Swansea Area Ratepayers' Association
Thornhill Vaughan Residents' Association
Vaughan C.A.R.E.S.
Ward 4 Residents' Association (City of York)
Ward Six Citizens' Group, Burlington
West Burlington Citizens' Group
Woodland Acres Ratepayers' Association
York Federation of Ratepayers
York Heights Residents' Association
York Mills Gardens Community Association

v) Other Interest Groups

Aurora and District Historical Society
Caledon East Historical Society
Esquesing Historical Society
Etobicoke Historical Society
Halton Region Conservation Foundation
New World Archaeology (Royal Ontario Museum)
Royal Botanical Gardens
Toronto Boardsailing Club
Toronto Chapter -- Ontario Archaeological Society
Whillans, Dr. Thomas H.

5. GOVERNMENT AGENCIES

Credit Valley Conservation Authority
Ganaraska Region Conservation Authority
Halton Region Conservation Authority
Lake Simcoe Region Conservation Authority
Metropolitan Toronto and Region Conservation Authority
Otonabee Region Conservation Authority
Environment Canada (Trent Severn Waterway)
Ontario Heritage Foundation

Information and assistance also provided by:

Peter Adams, M.P.P.
Peterborough

Honourable Charles Beer, M.P.P.
York North

Frank Faubert, M.P.P.
Scarborough -- Ellesmere

Cam Jackson, M.P.P.
Burlington South

Brad Nixon, M.P.P.
York Mills

Honourable Greg Sorbara, M.P.P.
York Centre

Norah Stoner, M.P.P.
Durham West

GREATER TORONTO AREA GREENLANDS STRATEGY
Key Questions

A. What Should Be Included in a Regional Greenlands System for the GTA?

1. The first step in developing a greenlands strategy is to define what is meant by the term "greenlands". It is important to keep in mind that this is a study concerned with regional systems in the Greater Toronto Area. **Should the term "greenlands" include:**

   - **greenspace corridors and related outdoor recreation (e.g., hiking, biking, walking, cross-country skiing trails);**
   - **significant natural, cultural, and archaeological areas;**
   - **areas that perform natural processes or functions required for greenlands (e.g., recharge/discharge)?**

   What else should it include?

2. In exploring a regional greenlands system, the study will specifically look at the river valleys and the Oak Ridges Moraine. In addition, certain significant natural, cultural, and archaeological areas outside of these specified areas will be included as part of the study. **Recognizing that this study must take a regional perspective, how should local greenlands be addressed as part of the study?**

B. How Do You Protect and Enhance Greenlands?

Identifying a regional system of greenlands is only the first step in this study. Significant areas should be protected and should be enhanced where possible to improve the existing quality of greenlands.

1. There are a number of ways in which greenlands can be protected. **Should the methods include: land-use planning/regulations; acquisition; land stewardship (agreements with private owners)? Are there any others?**

2. In addition to protection, enhancement of the existing greenspaces will be an important part of the greenlands strategy. **What various enhancement measures, such as river clean-up, tree planting, etc., could be considered?**

C. Who Should Manage the Land?

A greenlands strategy cannot be successful unless it is implemented effectively. In many ways, the question of who should manage the land and take responsibility for implementation of a greenlands strategy is as important as determining what the actual strategy is.

1. There are a variety of groups or institutions which may be capable of implementing a greenlands strategy. **Who should be responsible for managing the greenlands (e.g., existing governments or groups, an agency, a co-ordinating body, public/private partnerships)?**

2. The public has an important role to play, not only in the development of the greenlands strategy, but in its actual implementation. **What role can the public play in making the greenlands strategy work?**

D. Other Comments?

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Yaro, R.D. Dealing With Change in the Connecticut River Valley: A Design Manual for Conservation and Development. The Lincoln Institute of Land Policy and the Environmental Law Foundation, Cambridge, 1989.

Other Jurisdictions

Information received regarding greenlands:

Canada:

- City of Vancouver
- Meewasin Valley, Saskatchewan
- National Capital Commission
- Province of British Columbia
- Region of Niagara
- Region of Ottawa-Carleton
- Region of Waterloo

United States:

- City of Boulder, Colorado
- San Francisco Bay Area
- State of Maryland
- State of Massachusetts
- State of Michigan
- State of New Jersey
- State of New York
- State of Oregon
- State of Wisconsin
- Tri-State Region (New York, New Jersey, Connecticut)

Britain:

- British Countryside Commission
- British Lakes District